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of the

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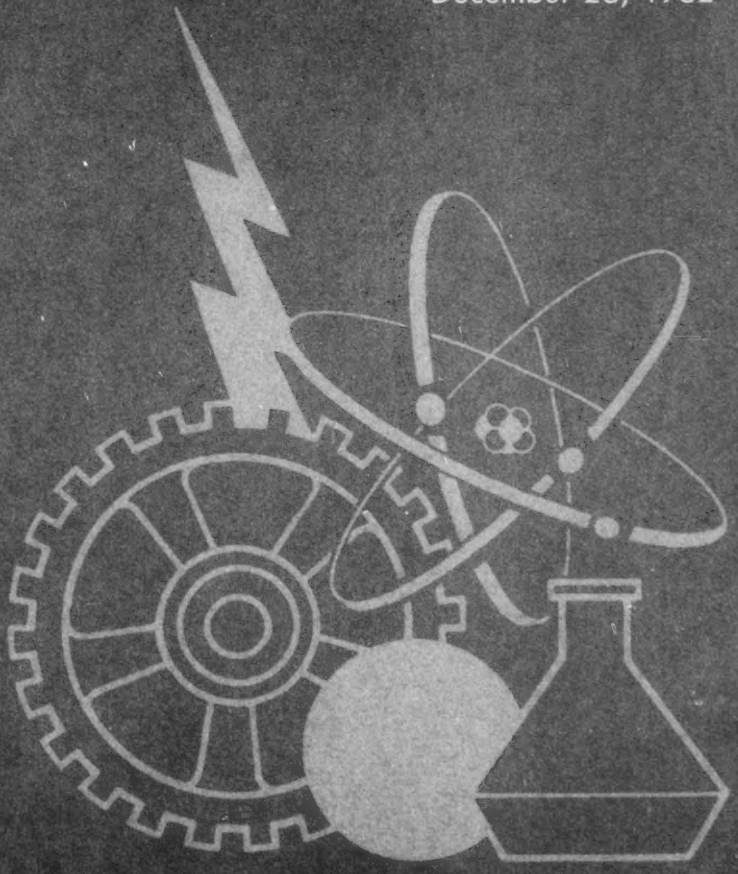

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December 28, 1982 Volume 1025 Number 4

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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.

THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.

GENERAL INFORMATION concerning PATENTS.

GENERAL INFORMATION concerning TRADEMARKS.

PRINTED COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.00 each; PLANT PATENTS in color, $8.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT member countries and the most recent PCT rule changes, see the notices appearing in the Official Gazette at 1001 O.G. 14 on Dec. 9, 1980 and at 1012 O.G. 20 on Nov. 17, 1981. For use of the European Patent Office as a searching authority for PCT applications filed in the United States, see the notice in the Official Gazette of Sept. 28, 1982 at 1022 O.G. 52.

Note that the international fees have been increased as of Jan. 1, 1982 and that the domestic PCT fees have been increased as of Oct. 1, 1982. Domestic PCT fees were increased by a rule change which was published at 1021 O.G. 11 on Aug. 10, 1982. The current schedule of fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
· No corresponding prior U.S. national application filed	500.00
· Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
· All cases	710.00
International Fees	
Basic Fees (first 30 pages)	270.00
Basic Supplemental Fee (for each sheet over 30)	6.00
Designation fee (for each national or regional office)	65.00

DONALD J. QUIGG,
Sept. 10, 1982. *Deputy Commissioner of Patents & Trademarks.*

Board of Appeals Decisions Rendered in the Month of Nov. 1982

Affirmed	**195**
Affirmed in Part	**21**
Reversed	**52**
Total	**268**

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

4,005,037, Re. S.N. 434,125, Filed Oct. 13, 1982, Cl. 260/4AR, POLYCARBONATE-POLYVINYL CHLORIDE MOULDING COMPOUNDS, Fritz Mietzsch, et al., Owner of Record: *Bayer Aktiengesellschaft, Leverkusen, Germany,* Attorney or Agent: Arthur G. Connolly, et al., Ex. Gp.: 142

4,014,574, Re. S.N. 437,685, Filed Oct. 29, 1982, Cl. 299/1, MINING MACHINE HAVING RECTANGULAR THRUST TRANSMITTING CONVEYOR COLUMN, Robert E. Todd, Owner of Record: *Browning B. Bushman, Houston, Tex.,* Attorney or Agent: Herbert C. Brinkman, et al., Ex. Gp.: 356

4,112,122, Re. S.N. 435,764, Filed Nov. 21, 1982, Cl. 426/19, PRESERVATION PROCESS, Dennis J. G. Long, Owner of Record: *B. P. Chemicals Ltd., London, England,* Attorney or Agent: Lorimer P. Brooks, et al., Ex. Gp.: 172

4,139,076, Re. S.N. 436,628, Filed Oct. 25, 1982, Cl. 181/151, LOUDSPEAKER ENCLOSURE WITH ENHANCED BASS RESPONSE, John O. Hruby, Jr., Owner of Record: *Inventor,* Attorney or Agent: C. Russell Hale, et al., Ex. Gp.: 211

4,215,930, Re. S.N. 405,379, Filed Aug. 5, 1982, Cl. 355/140, METHOD OF MAINTAINING THE CORRECT CONDITIONS OF AN ELECTROPHOTOGRAPHICALLY DUPLICATED IMAGE, Seiichi Miyakawa, et al., Owner of Record: *Ricoh Co. Ltd., Tokyo, Japan,* Attorney or Agent: Norman F. Oblon, et al., Ex. Gp.: 215

4,229,972, Re. S.N. 434,851, Filed Oct. 18, 1982, Cl. 244/073, METHODS OF AND/OR MEANS FOR INDICATING THE LEVELS OF LIQUIDS, Dougald Steward Moreland Phillips, et al., Owner of Record: *AHI Operations Ltd., Maukau City, Auckland, New Zealand,* Attorney or Agent: Holman R. Stern, Ex. Gp.: 244

4,230,549, Re. S.N. 431,172, Filed Sept. 9, 1982, Cl. 204/159.17, SEPARATOR MEMBRANES FOR ELECTROCHEMICAL CELLS, Vincent F. D'Agostino, et al., Owner of Record: *R. A. I. Research Corp., Long Island, N.Y.,* Attorney or Agent: Paul H. Heller, Ex. Gp.: 142

4,256,830, Re. S.N. 405,069, Filed Apr. 18, 1982, Cl. 430/372, PHOTOGRAPHIC MATERIAL CONTAINING A STABILIZER, Gerhard Jager, et al., Owner of Record: *AGFA Geraert Aktiengesellschaft, Leverkusen, Germany,* Attorney or Agent: Arthur G. Connolly, et al., Ex. Gp.: 166

4,285,607, Re. S.N. 434,617, Filed Oct. 15, 1982, Cl. 337/400, APPARATUS FOR FEEDING SINGLE SHEETS FROM A MAGAZINE TO THE PRINTING CYLINDER OF A PRINTING OFFICE MACHINE OR DATA PROCESSING MACHINE AND FOR STACKING THE SINGLE SHEETS ARRIVING FROM THE PRINTING CYLINDER, Helmut Steinhilber, Owner of Record: *Inventor,* Attorney or Agent: Michael J. Striker, Ex. Gp.: 337

4,302,043, Re. S.N. 416,116, Filed Sept. 9, 1982, Cl. 296/98, ROLL-UP TARP FOR TRAILERS, Jerry R. Dimmer, et al., Owner of Record: *Wahpeton Canvas Co., Inc., Wahpeton, N. Dak.,* Attorney or Agent: Dugald S. McDougall, et al., Ex. Gp.: 316

4,307,810, Re. S.N. 431,739, Filed Sept. 30, 1982, Cl. 212/160, REMOTE-CONTROL DEVICE FOR A CRANE, Frank P. Spalluto, Owner of Record: *Garden State Engine & Equipment Co., Inc., South Plainsfield, N.J.,* Attorney or Agent: Ezra Sutton, et al., Ex. Gp.: 315

4,315,339, Re. S.N. 435,562, Filed Oct. 21, 1982, Cl. 7/138, COMBINATION LAWN MOWER TOOL, Theodore P. Lightner, Owner of Record: *Inventor,* Attorney or Agent: D. C. Roylance, et al., Ex. Gp.: 323

4,323,187, Re. S.N. 431,825, Filed Sept. 30, 1982, Cl, 241/229, TELESCOPIC CARTON ASSEMBLY, Raymond A. Gillie, Owner of Record: *Arvey Corp., Chicago, Ill.,* Attorney or Agent: Max Dressler, et al., Ex. Gp.: 241

4,340,647, Re. S.N. 434,399, Filed Oct. 14, 1982, Cl. 428/429, VINYL GUM CURE ACCELERATORS FOR ADDITION-CURE SILICONE, Richard P.

Eckberg, Owner of Record: *General Electric Co., Waterford, N.Y.*, Attorney or Agent: Edward A. Hedmann, et al., Ex. Gp.: 164

4,347,650, Re. S.N. 426,751, Filed Sept. 29, 1982, Cl. 29/526R, METHOD OF PREPARING A SECTION FOR AN OVERHEAD DOOR, David O. Martin, Owner of Record: *Inventor,* Attorney or Agent: H. Ross Workman, et al., Ex. Gp.: 321

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b).

3,512,495, Reexam. No. 90/000,287, Requested: Nov. 12, 1982, Cl. 414/248, SELECTIVELY CONNECTABLE BOAT AND BARGE, Edwin H. Fletcher, Owner of Record: *United States Freight Co., New York, N.Y.*, Attorney or Agent: Arthur G. Yeager, Ex. Gp.: 312, Requester: John W. Gilbert Associates, Inc. Boston, Mass.

3,648,768, Reexam. No. 90/000,293, Requested: Nov. 22, 1982, Cl. 165/171, HEAT-EXCHANGER COMPONENTS, Gunter Scholl, Owner of Record: *Bio-Energy Systems, Inc., Ellenville, N.Y.*, Attorney or Agent: Karl F. Ross, Ex. Gp.: 346, Requester: Environmental Resources, Inc., Las Vegas, Nev.

3,724,800, Reexam. No. 90/000,295, Requested: Nov. 23, 1982, Cl. 248/205R, TELESCOPIC SIGHT MOUNTING, Irving N. Rubin, et al., Owner of Record: *Inventors,* Attorney or Agent: Cullen, et al., Ex. Gp.: 355, Requester: Charles W. McHugh, Arlington, Tex.

4,270,596, Reexam. No. 90/000,291, Requested: Nov. 22, 1982 Cl. 165/1, TUBE MAT HEAT EXCHANGER, Michael F. Zinn, et al., Owner of Record: *Bio-Energy Systems, Inc., Ellenville, N.Y.*, Attorney or Agent: Charles J. Brown, Jr., Ex. Gp.: 346, Requester: Environmental Resources, Inc., Las Vegas, Nev.

4,282,891, Reexam. No. 90/000,297, Requested: Nov. 26, 1982, Cl. 132/73.5, FINGERNAIL TREATING DEVICE, Antoine Duceppe, Owner of Record: *Requester,* Attorney or Agent: Raymond A. Robic, Ex. Gp.: 336, Requester: Revelations Antoine Ltee, Ville d'Anjou, Quebec, Canada

4,355,032, Reexam. No. 90/000,299, Requested: Oct. 21, 1982, Cl. 424/253, 9-(1,3-DIHYDROXY-2-PROPOXYMETHYL)-GUANINE AS ANTIVIRAL AGENT, Julien P. Verheyden, et al., Owner of Record: *Requester,* Attorney or Agent: Alan M. Krubiner & Annette M. Moore, Ex. Gp.: 125, Requester: Syntex, Corp., Palo Alto, Calif.

Change in PCT International Fees, Effective Jan. 1, 1983 and Jan. 22, 1983

On Sept. 10, 1982 the PCT Assembly in its ninth session (sixth Extraordinary) held in Geneva, Switzerland, fixed new amounts for the various international fees set in Swiss francs in the Schedule of Fees annexed to the PCT Regulations, effective Jan. 1, 1983. The new fee amounts in Swiss francs reflect a 7 1/2% increase over the previous amounts. The US dollar amounts, however, reflect a slight overall decrease from the previous amounts.

Effective Jan. 1, 1983, for United States applicants filing PCT international applications in the United States Receiving Office the amounts of the International fees are as follows:

FEE	AMOUNT
Basic Fee (first 30 pages)	$265.00
Basic Supplemental Fee (each page over 30)	$ 5.00
Designation Fee (per country or region)	$ 65.00

The International Bureau has informed the U. S. Patent and Trademark Office that due to a more favorable exchange rate for the US dollar, the International Search fee for United States applicants who choose the European Patent Office as Searching Authority will decrease, effective Jan. 22, 1983, from the current level of $710.00 to $670.00.

The amounts of the Transmittal Fee and the Search Fee for the United States Patent and Trademark Office as a Searching Authority remain at the level established on Oct. 1, 1982 (See 1021 O. G. 11, published on Aug. 10, 1982). The amounts of these fees are as follows:

Transmittal Fee	$125.00
Search Fee	
U. S. Patent and Trademark Office as Searching Authority	
—No corresponding prior U.S. national application filed	$500.00
—Corresponding prior U.S. national application filed	$250.00

GERALD J. MOSSINGHOFF,
Dec. 3, 1982. *Commissioner of Patents and Trademarks.*

Removal from Register

Pursuant to the provisions of 37 C.F.R. 1.347, a letter was directed on Oct. 21, 1982, to Mr. David V. Munnis at 207 W. Elm St., Urbana, Ill., 61801, the last post office address furnished by him to the Committee on Enrollment. No reply was received within the period of twenty days therein set. Accordingly, his name is being removed from the Register of Attorneys.

DONALD J. QUIGG,
Dec. 6, 1982. *Chairman, Committee on Enrollment.*

Register of Attorneys and Agents

In the May 18, 1982 issue of the Official Gazette, Volume 1018, Number 20, there was published a list of names and addresses of persons whose names had been removed from the Register of Patent Attorneys and Agents pursuant to the provisions of 37 CFR 1.347.

The following persons, whose names appeared in that list, have been retained on the active Register of Attorneys and Agents in view of information which they have furnished to the Committee on Enrollment.

DONALD J. QUIGG,
Nov. 30, 1982. *Chairman, Committee on Enrollment.*

Names of Registered Attorneys and Agents To Be Retained on the Active Register

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Morgan, Christopher H., Laney, Dougherty, Hessin & Beavers, Inc., Suite 900, 101 Park Ave., Oklahoma City, Okla. 73102

Munro, Jack C., Syite E, 2500 Townsgate Rd., Westlake Village, Calif. 91361

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Pollen, Kalman S., USACECOM, DRSEL—PC—P—PC—1, Fort Monmouth, N.J. 07703

Stokes, William D., 707 Prince St., Alexandria, Va. 22314

Stolzle, Frederick A. Jr., Cole, Holladay & Stolzle, P.O. Box 2864, Suite 410, 343 Riverside Mall, Baton Rouge, La. 70821

Synnestvedt, Carl H., P.O. Box 70, Kempton, Pa. 19529

Taylor, John P., 11149 Sutherland Ave., Cupertino, Calif. 95014

Vogel, Hilmond O., 10320 Desert Rock Dr., Sun City, Ariz. 85351

Wilson, J. Russell, 11 S. Meramec, Suite 1010, St. Louis, Mo. 63105

Wyzan, Henry S., Nabisco Brands, Inc., 15 River Rd., Wilton, Conn. 06897

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Zborovsky, Ilya, 3285 Wolfson Dr., Baldwin, N.Y. 11510

Erratum

In the Official Gazette of Apr. 8, 1975 under TRADEMARK REGISTRATIONS RENEWED, on page TM 138, "607,924. POWER MATE. Int. Cl. 6 (U.S. Cl. 23). 6-28-55." should be deleted and "607,924. POWER MATE. Int. Cl. 7 (U.S. Cl. 23). 6-28-55." should be inserted.

Status of PTO Services

The following is an update of the status of PTO services as of Dec. 3, 1982:

Service Item	FY 1983 Performance Goal (Calendar Days)	Actual	Comment
Filing Receipts:			
Patents	22	56	Increase due to increased filings in September.
Trademarks	30	66	Delays continue due to increased filings in September.
Patent Copies:			
Window Coupons	5	78% within 5 days	Problems encountered in the initial phase of implementing an automated control system.
Mail Coupons*	29	99% within 29 days	
Letter Orders*	34	99% within 34 days	
Certified Copies:			
Trademark Registrations	30	5	
Applications-As-Filed	20	93% within 20 days	
File-Wrapper/Contents	N/A	90% within 15 days	
Walk-up Certification	1	99% within 1 day	Service extended to Trademarks.
Trademark Search Library:			
Filing Drawings	21	68	Due to increased filings in September.
Filing Reg. Certificates	3	5	
Assignments			
Patents	15	52	Goals and the method of computing actual time are being revised.
Trademark	21	79	Goals and the method of computing actual time are being revised.
Patent Official Gazette			
In Bookstore	Issue Date	On Schedule	
Mailed	Issue Date	Avg. 1 day late	
Patent Grants Mailed	Issue Date	2 days late	
Patent Copies Available	Issue Date	75%	90% available by day after Issue Date.
Trademark Official Gazette			
In Bookstore	Issue Date	On Schedule	
Mailed	Issue Date	Avg. 2 days late	
Trademark Regs. Mailed	Issue Date	2 days late	

*Goal now includes mail processing and delivery time. A recent survey of mail delivery time for these services yielded the fact that the *average* amount of time required for one-way delivery is seven calendar days. Therefore the prior goal was increased by 14 days to reflect average time from mailing by requestors to receipt of copies.

IMPROVEMENTS TO SERVICES

- *Search Room Working Conditions*—New carpet has been installed in the Patent Public Search Room, the search tables have been rehabilitated, and the index files have been painted. A "quiet" area has been designated in the high-ceiling area of the Search Room. The public address/paging system, which is important to some search room users, has speakers now directed to only the low-ceiling area. It is hoped that this will reduce the noise for those who find it disruptive.
- For other improvements made in services, see the Official Gazettes for Oct. 26, 1982 and Nov. 30, 1982.

Dec. 3, 1982.

THERESA A. BRELSFORD,
Assistant Commissioner for Administration.

PATENT NOTICES

Certificates of Correction for the Week of Dec. 28, 1982

Re. 31,029	4,311,242	4,340,777	4,350,622
D. 260,105	4,314,352	4,340,786	4,350,833
3,689,274	4,314,559	4,341,883	4,350,925
4,002,470	4,319,337	4,342,103	4,351,079
4,094,855	4,320,061	4,342,255	4,351,173
4,108,610	4,325,704	4,342,751	4,351,392
4,238,127	4,328,341	4,343,861	4,351,642
4,239,599	4,329,114	4,344,005	4,351,685
4,261,772	4,329,313	4,344,390	4,351,891
4,273,713	4,329,459	4,345,048	4,352,175
4,284,957	4,330,839	4,345,100	4,352,349
4,288,649	4,333,164	4,347,116	4,352,585
4,292,445	4,333,686	4,348,078	4,352,938
4,293,048	4,333,866	4,348,401	4,353,374
4,295,414	4,334,085	4,348,798	4,353,408
4,295,903	4,334,089	4,348,852	4,353,895
4,299,648	4,334,837	4,348,927	4,353,909
4,301,803	4,336,107	4,348,942	4,353,994
4,302,811	4,336,318	4,348,972	4,354,428
4,304,096	4,336,392	4,349,305	4,354,681
4,304,926	4,338,434	4,349,484	4,355,079
4,304,944	4,338,611	4,349,487	4,355,953
4,306,292	4,338,659	4,349,798	4,357,000
4,306,553	4,339,879	4,349,868	4,357,048
4,308,717	4,339,941	4,349,958	
4,309,476	4,340,452	4,350,036	

Disclaimers

3,785,967.—*Jakob van Klinken,* Amsterdam, Netherlands. HYDRODESULFURIZATION WITH EXPANDED OR MOVING BED OF CATALYST HAVING SPECIFIC PARTICLE DIAMETER AND SPECIFIC PORE DIAMETER. Patent dated Jan. 15, 1974. Disclaimer filed Oct. 4, 1982, by the assignee, *Shell Oil Co.*

Hereby enters this disclaimer to all of the claims of said patent.

3,988,301.—*Lambert Gaston Jeurissen* and *Frans Antoon De Smedt,* Edegem, Belgium. PROCESS FOR THE PREPARATION OF HIGH-MOLECULAR WEIGHT POLYESTERS. Patent dated Oct. 26, 1976. Disclaimer filed Sept. 29, 1982, by the assignee, *AGFA-Gevaert N. V.*

Hereby enters this disclaimer to all claims of said patent.

4,347,656.—*George E. Smith,* Murray Hill and *Robert J. Strain,* Plainfield, N.J. METHOD OF FABRICATING POLYSILICON ELECTRODES. Patent dated Sept. 7, 1982. Disclaimer filed Oct. 14, 1982, by the assignee, *Bell Telephone Laboratories, Inc.*

The term of this patent subsequent to Nov. 18, 1992 has been disclaimed.

Dedications

3,303,955.—*Andrew G. Osborne* and *Edward A. Stassin,* Richmond, Ind. CONTAINER CLOSURE. Patent dated Feb. 14 1967. Dedication filed Aug. 30, 1982, by the assignee, *Aluminum Co. of America.*

Hereby dedicates said patent to the Public.

3,601,273.—*Howard R. Kutcher,* Allison Park, Pa. PILFERPROOF CLOSURE WITH VERTICAL WEAKENING LINES. Patent dated Aug. 24 1971. Dedication filed Aug. 30, 1982, by the assignee, *Aluminum Co. of America.*

Hereby dedicates said patent to the Public.

Disclaimers and Dedications

3,866,598.—*Lynn Lawrence Augspurger,* Birmingham, Mich. PROCESSES FOR REPRODUCTION OF CELLULAR BODIES. Patent dated Feb. 18, 1975. Disclaimer and Dedication filed Oct. 15 1982, by the inventor.

The term of this patent subsequent to Dec. 17, 1991 has been disclaimed and dedicated to the Public.

3,906,929.—*Lynn Lawrence Augspurger,* Birmingham, Mich. PROCESSES FOR REPRODUCTION OF CELLULAR BODIES. Patent dated Sept. 23, 1975. Disclaimer and Dedication filed Oct. 15, 1982, by the inventor.

The term of this patent subsequent to Dec. 17, 1991 has been disclaimed and dedicated to the Public.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Illinois	Chicago Public Library	(312) 269-2865
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6552
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214, Ext. 215
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7814
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1321**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 226
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

**Call only between the hours of 10:00 a.m. and 5:00 p.m.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF November 13, 1982

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director ..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	11-12-80
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director ..... Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	7-20-81
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director .... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	1-21-80
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director ..... Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	4-27-81
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director ..... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	10-06-81
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	11-24-80
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director ..... Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	3-03-81
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director ..... Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	11-24-80
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director ..... Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.	2-02-81
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director ..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-26-79
DESIGN, GROUP 290—KENNETH L. CAGE, Director ..... Industrial Arts; Household, Personal and Fine Arts.	12-01-80
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director ..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	5-01-81
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director ... Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	3-02-81
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director ..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	2-13-80
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director ..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	11-17-80
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—A. L. SMITH, Director ..... Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	9-17-80

Expiration of patents: The patents within the range of numbers indicated below expire during November 1982, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,214,767 to 3,221,338, inclusive

Plant Patents ..... Numbers 2,566 to 2,576 inclusive

REEXAMINATIONS

DECEMBER 28, 1982

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination

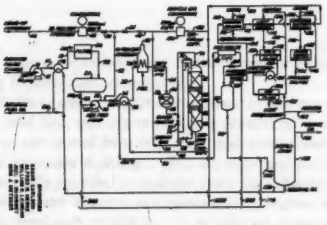
B1 Re. 29,314 (37th)

ASPHALTENE HYDRODESULFURIZATION WITH SMALL CATALYST PARTICLES IN A PARALLEL REACTOR SYSTEM

Edgar Carlson, deceased late of Allison Park, Pa., by Gulf Research & Development Company, Pittsburgh, Pa.; Alfred M. Henke, Springdale, Pa.; William R. Lehrian, Verona, Pa.; Joel D. McKinney, Pittsburgh, Pa.; Kirk J. Metzger, Verona, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Reexamination Request No. 90/000,095, Nov. 2, 1981.
Reexamination Certificate for Patent No. Re. 29,314, issued Jul. 19, 1977, Ser. No. 721, 418, Sep. 8, 1976.

U.S. Cl. 208/216 **Int. Cl.³ C10G 23/02.**



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 14 and 17 were previously cancelled.

Claims 1 and 7 are determined to be patentable as amended:

Claims 2–6, 8–13, 15, 16, 18 and 19, dependent on amended claims, are determined to be patentable.

New claims 20–44 are added and determined to be patentable.

1. A process for the hydrodesulfurization of a crude oil or a reduced crude oil containing the asphaltene fraction of the crude comprising passing said oil together with hydrogen through a plurality of reactors arranged in parallel, each of said reactors containing a series of compact beds of catalyst particles comprising a Group VI metal and Group VIII metal on alumina, the particles in said compact catalyst beds being between about 1/20 and 1/40 inch in diameter, *in said catalyst more than 60 percent of the pore volume is in pores of 50 Å, radius or greater,* the hydrogen partial pressure in said plurality of compact parallel beds being 1,000 to 5,000 pounds per square inch and a throughput of at least 127 volumes of oil per volume of catalyst is continued for at least 10 days.

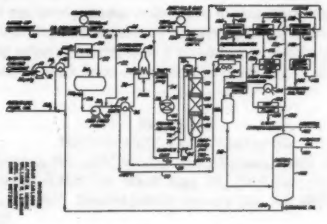
B1 Re. 29,315 (38th)

ASHPALTENE HYDRODESULFURIZATION WITH SMALL CATALYST PARTICLES UTILIZING A HYDROGEN QUENCH FOR THE REACTION

Edgar Carlson, deceased late of Allison Park, Pa., by Gulf Science & Technology Company, Pittsburgh, Pa.; Alfred M. Henke, Springdale, Pa.; William R. Lehrian, Joel D. McKinney, Kirk J. Metzger, all of Pittsburgh, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Reexamination Request No. 90/000,096, Nov. 2, 1981.
Reexamination Certificate for Patent No. Re. 29,315, issued Jul. 19, 1977, Ser. No. 721,419, Sep. 8, 1976.

U.S. Cl. 208/216 **Int. Cl.³ C10G 23/02.**



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 18 and 21 were previously cancelled.

Claims 1, 6 and 11 are determined to be patentable as amended:

Claims 2–5, 7–10, 12–17, 19, 20 and 22–26, dependent on amended claims, are determined to be patentable.

New claims 27–62 are added and determined to be patentable.

1. A process for the hydrodesulfurization of a crude oil or a reduced crude containing the asphaltene fraction of the crude comprising passing a mixture of hydrogen and said oil through a compact bed of catalyst particles comprising a Group VI metal and Group VIII metal on alumina, the hydrogen partial pressure being 1,000 to 5,000 pounds per square inch, said particles in said bed being between 1/20 and 1/40 inch in diameter, *in said catalyst more than 60 percent of the pore volume is in pores of 50 Å, radius or greater,* and a throughput of at least 127 volumes of oil per volume of catalyst is continued for at least 10 days.

REISSUES

DECEMBER 28, 1982

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

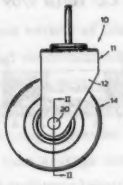
Re. 31,110
SOLID AXLE WHEEL SUPPORT AND SEALED BEARING CONSTRUCTION

John W. Black, Hickory Corners, Mich., assignor to Pemco-Kalamazoo, Inc., Kalamazoo, Mich.

Original No. 4,122,580, dated Oct. 31, 1978, Ser. No. 806,903, Jun. 15, 1977. Application for reissue Oct. 29, 1980, Ser. No. 201,951

Int. Cl.³ A47B *91/00*; F16C *33/00, 1/24*

U.S. Cl. 16—46 5 Claims



5. A wheel construction for a tire having a central coaxial opening therethrough, comprising:

a cylindrical sleeve (21) fixedly disposed in said central opening in said tire, said sleeve having a portion of reduced inside diameter spaced from both axial ends thereof and a cylindrical extension defining a first annular seal surface (52,53) integrally provided at opposite axial ends thereof;

a pair of outer bearing race means (38,39) located at the opposite axial ends of said portion of reduced diameter;

a cylindrical axle (20) disposed coaxially within and spaced from said reduced portion of said sleeve;

a pair of inner bearing race means (41,42) on said axle and radially aligned with said outer bearing race means and anti-friction means (43) positioned between respective pairs of said bearing race means;

frame legs (12,13) and securement means (56,57,58) for effecting an operative connection of said frame legs to said axle;

a seal shoulder (A) on said axle spaced axially inwardly along said axle from both of the ends thereof;

a generally circular end cap (48,49) made of a compressible thermoplastic material encircling said axle and having integral seal means (50,51) bearing against said seal shoulder, said end cap having an axial section (B) thereof extending axially from said seal means to bear against the inner face of the axially adjacent frame leg and said end cap further having an integral second annular seal surface (C) thereon spaced radially outwardly from said axial section bearing against said first annular seal surface (52,53), the parts being so proportioned that when said frame legs are in position adjacent the ends of said axle, said seal means (50,51) on said end cap is urged snugly against said seal shoulder (A) and said first (52,53) and second (C) annular seal surfaces urged into engagement with each other;

whereby said frame legs are held firmly with respect to said axle and through said axle and said securement means held rigidly with respect to each other and said second annular seal surface of said compressible end cap is urged into engagement with said first annular seal surface on said cylindrical sleeve for sealing said bearing means from dust.

Re. 31,111
WAVE DRIVEN GENERATOR

Glenn E. Hagen, New Orleans, La., assignor to Williams, Inc., New Orleans, La.

Original No. 4,077,213, dated Mar. 7, 1978, Ser. No. 657,892, Feb. 13, 1976. Application for reissue Apr. 23, 1979, Ser. No. 32,162

Int. Cl.³ F03B *13/12*

U.S. Cl. 60—500 52 Claims

1. A power gathering array for extracting energy from wave motion of a fluid, said wave motion having both an amplitude spectrum and wavelength spectrum, comprising:

a plurality of differing sized floats, each said float having a density such that it floats on the surface of said fluid and moves in response to said wave motion;

a connecting means for connecting the rear of at least one first smaller float of said plurality to the front of at least one second larger float of said plurality, said connecting means being adapted to allow relative motion to occur between said first and second floats responsive to said wave motion when the two floats are oriented so the smallest float points into the direction of wave motion;

second connecting means for connecting the rear of the largest float of said array to a fixed object; and

work extracting means responsive to said relative motion for extracting a unit amount of work from a unit amount of said relative motion and a non-linearly greater number of units of work from each additional unit of relative motion.

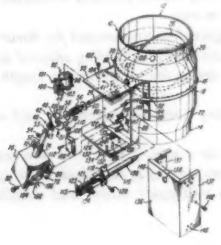
Re. 31,112
AUTOMATIC FLUE DAMPER

John Prikkel, III, 2952 Ensley Ave., Dayton, Ohio 45414

Original No. 4,108,369, dated Aug. 22, 1978, Ser. No. 781,649, Mar. 28, 1977. Application for reissue Apr. 13, 1979, Ser. No. 29,927

Int. Cl.³ F23L *11/00*

U.S. Cl. 236—1 G 20 Claims



1. In a mechanism for controllably venting gases from the flue of a combustion apparatus, said mechanism comprising a housing for mounting to said flue and into which said gases pass, a damper mounted in said housing and movable between a first position opening said housing for the passage of gases therefrom and a second position substantially closing said housing against the passage of gases therethrough, the improvements comprising yieldable means biasing said damper to said first position, motive means for holding said damper against the bias of said yieldable means in said second position, heat sensor means disposed in said housing upstream of said damper for disabling said motive means upon sensing heated gases in said housing and means for connection in circuit with said motive means of a thermostat responsive to a medium

heated by the combustion apparatus for also disabling said motive means.

Re. 31,113

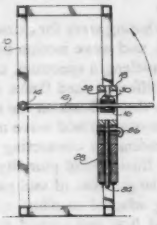
VARIABLE RESISTANCE LIFTING MECHANISM

Charles M. Coker, Huntington Beach, and Gary M. Kling, Fullerton, both of Calif.

Original No. 4,093,213, dated Jun. 6, 1978, Ser. No. 767,412, Feb. 10, 1977. Application for reissue Jan. 17, 1980, Ser. No. 112,888

Int. Cl.³ A63B 21/06

U.S. Cl. 272—118 2 Claims



3. [The mechanism as defined in claim 2, further comprising] *A variable resistance lifting mechanism, comprising:*

a frame having means for guiding the movement of weights;

lever arm means pivotally attached to said frame at a pivot point and constructed to permit substantially only reciprocation of said lever arm means through a sleeve means when said lever arm means is pivoted by a user;

a pivotable, linear bearing sleeve means for receiving said lever arm means in telescoping relationship, said sleeve means being mounted at a position remote from said lever arm means pivot point, said sleeve means being mounted for linear movement within said guide means and for simultaneous pivotal movement with respect to said frame to maintain alignment with said lever arm, said sleeve means simultaneously distributing a user's lifting forces over a substantial length of the lever arm means during lifting of the lever arm means;

bar weight supporting means pivotally connected to said linear bearing sleeve means;

a plurality of weights slidably mounted for linear movement on said guide means, said weight being adapted to distribute the forces against said guide means over a length of said guide means;

means for attaching a selected number of said weights to said bar means,

whereby pivoting by a user of said lever arm means about its pivot point causes pivoting of said linear bearing sleeve means with respect to said guide means and simultaneous linear movement of said sleeve means and of said weights on said guide means;

a housing slidably mounted on said guide means and adapted to connect said linear bearing sleeve to said bar means, said housing providing further simultaneous distribution of the bending forces over a longitudinal length of said guide means as said weights and housing are moved linearly on said guide means; and a clevis pin pivotally connecting said linear bearing sleeve means to said housing.

Re. 31,114

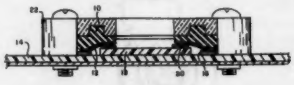
ELECTRICAL CONNECTOR

William E. Berg, Prior Lake, Minn., assignor to Tektronix, Inc., Beaverton, Oreg.

Original No. 4,150,420, dated Apr. 17, 1979, Ser. No. 861,066, Dec. 15, 1977. Continuation of Ser. No. 631,591, Nov. 13, 1975, abandoned. Application for reissue Nov. 17, 1980, Ser. No. 207,515

Int. Cl.³ H01R 9/09

U.S. Cl. 339—17 CF 9 Claims



6. A high-frequency electrical connector system for electrically interconnecting a conductive path of a first circuit element with a conductive path of a second circuit element, said system comprising:

(a) a resilient member having a surface defined by two protruding portions and an intermediate indented portion;

(b) a contact of flexible metallic material overlaying a substantial part of each said portion of said surface of said resilient member and extending no further than the boundaries of said surface, said contact member also having a surface defined by two protruding portions and an intermediate indented portion, said surfaces of said resilient member and said conduct member being further configured such that said resilient member provides a restoring support for said contact member and such that a common force applied against both protruding portions of said contact member causes said portions to move away from each other;

(c) rigid frame means for holding said resilient member and said contact member against said circuit elements such that a first protruding portion of said contact member touches a conductive path of said first circuit element and a second protruding portion of said contact member touches a conductive path of said second circuit element; and

(d) means for urging said frame means, and thereby said resilient member and said contact member, further against said circuit elements so as to cause said protruding portions of said contact member to move away from each other and thereby wipingly engage said conductive paths.

PLANT PATENTS

GRANTED DECEMBER 28, 1982

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,968

BLACK WALNUT TREE

Walter F. Beineke, West Lafayette, Ind., assignor to Purdue Research Foundation, West Lafayette, Ind.

Filed Apr. 16, 1981, Ser. No. 254,904

Int. Cl.[3] A01H *5/03*

U.S. Cl. Plt.—32 1 Claim

1. A new and distinct variety of black walnut tree substantially as illustrated and described, which produces abundant annual crops of medium-size nuts; averaging 4 per cluster; the percentage of weight of kernel to nut averages approximately 15 percent, and nut bearing begins early in life of tree; time of leafing is much later than average and has excellent anthracnose resistance; pistillate flowers develop very late and pollen sheds late.

4,969

LILY PLANT: LILIUM GOLDDIGGER

Edward A. McRae, Boring, Oreg., assignor to Melridge, Inc., Sandy, Oreg.

Filed Apr. 29, 1981, Ser. No. 258,742

Claims priority, application Netherlands, May 29, 1980, LEL 99

Int. Cl.[3] A01H *5/00*

U.S. Cl. Plt.—68 1 Claim

1. The new and distinctive variety of Asiatic hybrid lily plant substantially as herein shown and described, characterized by improved capability of being forced into flower under glass, increased resistance to leaf scorch and bud abortion when forced into flower under glass, improved inflorescence, buds of intense yellow color, and flowers which are also of an intense yellow color and characterized further by the presence of relatively thick, broad and overlapping tepals lightly spotted with tiny, pigmented papillae.

PATENTS

GRANTED DEC. 28, 1982

ERRATA

For CLASS	See PATENT NO.
128–258	4,365,394
464–132	4,365,488
494–037	4,365,741
436–075	4,365,969
436–066	4,365,970
419–006	4,365,995
419–028	4,365,996
148–031	4,365,997
525–498	4,366,096
436–501	4,366,143
528–335	4,366,272
378–057	4,366,382

PATENTS

GRANTED DEC. 26, 1961

No.

Page

PATENTS

GRANTED DECEMBER 28, 1982

GENERAL AND MECHANICAL

4,365,351
DIVING SUIT WITH NECK AND WRIST SEALS
David C. Doerschuk, Grove City, Ohio, and James F. Mank, Ottumwa, Iowa, assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Apr. 10, 1981, Ser. No. 252,725
Int. Cl.³ B63C *11/04*
U.S. Cl. 2—2.1 R **12 Claims**

1. In a diving suit having a body member encircling fabric edge portion defining an opening for that body member, the improvement comprising:

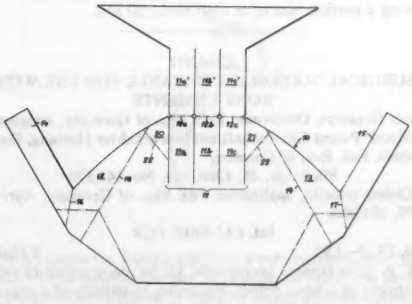
said fabric edge portion being conical and tapering inwardly going distally of said body member;

a seal member comprising a body of resiliently stretchable and compressible open cell foam rubber, said body having a right cylindrical outer surface, and an axial, through passage defined in part by a cylindrical inner surface and in part by a frustoconical inner surface whereby said body has an inside tapered end portion and presents a narrow annular edge at its proximal end and a broader annular edge at its distal end;

said frustoconical inner surface being partially disposed in overlapping relation to said conical fabric edge portion; and

means securing said seal member to said fabric.

4,365,352
REVERSIBLE BASEBALL GLOVE
Israel Zidele, 1303 Ditmas Ave., Brooklyn, N.Y. 11226
Continuation-in-part of Ser. No. 46,798, Jun. 8, 1979, Pat. No. 4,227,263. This application Oct. 10, 1980, Ser. No. 195,942
Int. Cl.³ A41D *13/10*
U.S. Cl. 2—19 **9 Claims**



1. In the baseball glove comprising a front piece of tough flexible sheet material and rear sheeting defining with said front piece a thumb stall and four other finger stalls together with a web between said thumb stall and the finger stall proximal thereto,

the improvement wherein said front piece consists of an integral blank which is a flattened-out state is symmetrical about a central portion forming part of at least one of said other finger stalls, said central portion being flanked by two wings one of which forms part of said thumb stall and side web while the other forms part of at least a stall for the little finger, said web being joined by lacing to the finger stall proximal thereto.

4,365,353
BODY PUPPET AND TEACHING AID
Richard N. Rayl, 6911 Via Irana, Stanton, Calif. 90680
Filed Dec. 31, 1980, Ser. No. 221,820
Int. Cl.³ A41B *1/00*
U.S. Cl. 2—115 **9 Claims**

1. A body puppet comprising:

a garment sized to be worn about the body of a user;

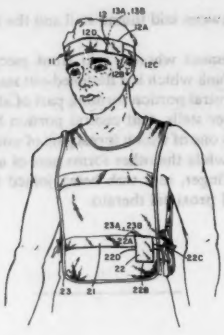
indicia formed on said garment depicting a humanized face, said garment formed of a sufficiently resilient fabric material so that when said garment is manually stretched by said user, said indicia momentarily distorts to assume varying facial expressions on said puppet; and

an elongate slot formed through said garment and aligned with a portion of said indicia corresponding to the mouth of said humanized face, said slot adapted to permit said garment to spread apart in the vicinity of said portion of said indicia when said garment is manually stretched to simulate the opening of the mouth of said puppet.

4,365,354
RETROREFLECTIVE STRIP WITH POCKET
Edith Sullivan, 51 Osgood St., Methuen, Mass. 01844
Filed Oct. 22, 1980, Ser. No. 199,571
Int. Cl.³ A41D *27/20*; G02B *5/12*
U.S. Cl. 2—247 **8 Claims**

1. In wearing apparel having a retroreflective strip of material the improvement comprising, a portion of retroreflective material secured to said retroreflective strip on the outside

thereof and coacting therewith to form a pocket having an opening for accommodating small items and means including



an area of said retroreflective strip of material for assisting in protecting the small items from perspiration of the wearer.

4,365,355

PATCH POCKET AND FLAP CONSTRUCTIONS

Joseph W. A. Off, Irving, and Judson H. Early, Dallas, both of Tex., assignors to Haggar Company, Dallas, Tex.

Continuation of Ser. No. 948,680, Oct. 5, 1978, abandoned. This application Jun. 2, 1981, Ser. No. 269,688

Int. Cl.³ A41D *27/20*

U.S. Cl. 2—247 **4 Claims**

4. A method of constructing a patch pocket on a garment including the steps of:

providing a layer of pocket material having opposed side edges spaced apart a predetermined distance, a bottom edge interconnecting the side edges, and an upper edge including an extension extending upwardly beyond the upper ends of the side edges and having a width less than the space in between the side edges;

folding the extension downwardly down along a line extending between the upper ends of the side edges;

adhesively securing the extension in the folded condition to define a folded top edge of the pocket blank;

said layer of pocket material having the extension folded and adhesively secured defining a patch pocket blank including a reverse side comprising the side having the extension secured thereto and an obverse side comprising the opposite side thereof;

attaching fusible adhesive to the obverse side of the patch pocket blank along the side and bottom edges thereof;

folding the side and bottom edges of the patch pocket blank inwardly so that the fusible adhesive attached thereto faces in the direction of the reverse side of the patch pocket blank;

positioning the patch pocket blank on the outside surface of a garment with the fusible adhesive engaging the outside surface of the garment and with the reverse side of the patch pocket blank positioned adjacent thereto; and

activating the fusible adhesive to secure the patch pocket blank in engagement with the outside surface with the garment being carried out by forming a stitch along the side and bottom edges along the patch pocket blank, said stitch including at least one thread comprising a fusible adhesive.

4,365,356

PROSTHESIS PARTS PROVIDED WITH A COATING OF A BIO-ACTIVE MATERIAL

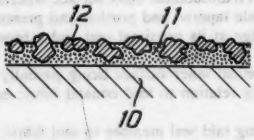
Heinz Broemer; Werner Adam, both of Hermannstein, and Friedhelm Hedrich, Edingen, all of Fed. Rep. of Germany, assignors to Ernst Leitz Wetzlar GmbH, Wetzlar, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 968,667, Dec. 12, 1978, abandoned, which is a division of Ser. No. 733,313, Oct. 18, 1976, Pat. No. 4,168,326. This application Jul. 21, 1980, Ser. No. 170,805

Claims priority, application Fed. Rep. of Germany, Oct. 18, 1975, 2546824

Int. Cl.³ A61F *1/24*

U.S. Cl. 3—1.9 **23 Claims**



1. A prosthesis working piece comprising: a structural core element; at least one carrier layer substantially free of pores applied to said core element, said carrier layer comprising an inorganic enamel which is compatible with the body; and a multitude of particles of a bio-active material at least partly embedded in said carrier layer to provide a multitude of exposed areas of the particles on which the bone tissue can grow together with the prosthesis, said bio-active material particles having a particle size of at least about 50 μm.

4,365,357

SURGICAL MATERIALS SUITABLE FOR USE WITH BONE CEMENTS

Klaus Draenert, Ottobrunn, Fed. Rep. of Germany, assignor to Merck Patent Gesellschaft mit beschränkter Haftung, Darmstadt, Fed. Rep. of Germany

Filed Apr. 25, 1980, Ser. No. 143,570

Claims priority, application Fed. Rep. of Germany, Apr. 28, 1979, 2917446

Int. Cl.³ A61F *1/24*

U.S. Cl. 3—1.91 **6 Claims**

1. A bone cement preparation kit for bone repair or other treatment of a bone defect, consisting essentially of a surgical network material formed of physiologically acceptable filaments which are resorbable and are of a thickness of about 50—about 300 μm, the network having an internal mesh width of about 1–10 mm and having a shape appropriate to the in-

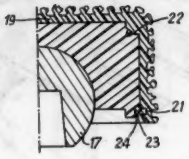
tended use; and a prepolymer and monomer for preparation of bone cement useful in bone repair or other bone treatment.

4,365,358

JOINT PROSTHESES, PARTICULARLY IN HIP PROSTHESES

Robert Judet, deceased, late of Paris, France, and by Vincent Judet, administrator, 17, Boulevard de Montmorency, 75016 Paris, France

Filed Aug. 15, 1979, Ser. No. 66,842
Claims priority, application France, Aug. 18, 1978, 78 24094
Int. Cl.³ A61F 1/03
U.S. Cl. 3—1.912 **3 Claims**



1. A hip joint prosthesis comprising
a base for engaging the prosthesis with a femur,
means on said base for engaging the base to the femur,
a cotyle for engaging the prosthesis with a hip bone,
means on said cotyle for engaging it to the hip bone,
an articulating hip joint for connection between said cotyle and said base, said hip joint including a peripheral severable lip for engagement with a complementary groove at an inner face of said cotyle,
means for providing access by a severing device to said lip,
said base being formed with a shank at one end terminating in an outwardly extending collar,
said femur engaging means comprising a plurality of alveoli on the outer surface of said shank and on the lower surface of said collar for engagement with the osseous matter of a femur bone.

4,365,359

PMMA COATED BONE CONNECTIVE PROSTHESES AND METHOD OF FORMING SAME

Simon Raab, 5872 Westbury Ave., Montreal, Quebec, Canada (H3W 2W9)

Continuation-in-part of Ser. No. 45,657, Jun. 5, 1979, Pat. No. 4,281,420. This application Mar. 31, 1981, Ser. No. 249,439
Claims priority, application United Kingdom, Feb. 15, 1979, 7905445
Int. Cl.³ A61F 1/24; A01N 1/02
U.S. Cl. 3—1.912 **30 Claims**

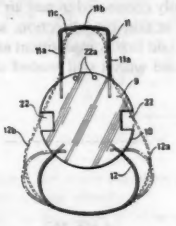
1. In a process for fixedly adhering a polymethylmethacrylate film to a prosthetic element to provide an improved prosthesis adapted to be joined to bone by means of bone cement, said prosthesis having been prepared by the steps of treating said prosthetic element to eliminate any weak boundary layer, applying polymethylmethacrylate to said treated surface to form a film thereon; and thereafter annealing said polymethylmethacrylate film, the improvement which comprises applying polymethylmethacrylate to the surface of said prosthetic element in the presence of a silane coupling agent.

4,365,360

LENS DESIGNED FOR IMPLANTATION INTO A LENS CAPSULE OF A HUMAN EYE

Tiong S. Ong, 174 Ghijseland, 3161 Vm Rhoon, Netherlands

Continuation of Ser. No. 134,892, Mar. 28, 1980, abandoned. This application Dec. 11, 1981, Ser. No. 329,811
Claims priority, application Netherlands, Apr. 5, 1979, 7902703
Int. Cl.³ A61F 1/16, 1/24
U.S. Cl. 3—13 **5 Claims**



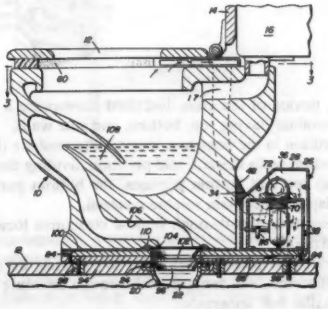
1. An intraocular lens implantable into the posterior chamber of a human eye without fixating sutures, comprising an optical lens body and at least a pair of loop shaped members fixed to the periphery of said lens body and extending outwardly from generally opposed sides thereof, one member being of U-shaped configuration and the other member being ovaloid, said ovaloid member being relatively radially inwardly resiliently deformable and said U-shaped member being relatively radially inwardly non-deformable.

4,365,361

TOILET BOWL ODOR EDUCTING AND POWERED EXHAUST SYSTEM

Grant H. Sanstrom, P.O. Box 138, Parker, Wash. 98939

Filed Mar. 23, 1979, Ser. No. 23,246
Int. Cl.³ E03D 9/052
U.S. Cl. 4—213 **8 Claims**



1. In combination with a toilet bowl having a water seal-type drain outlet communicated with a drain line and a bowl flushing system including flushing water passage means for passing flushing water from a supply thereof into the interior of said bowl, housing means defining first and second closed compartments, said housing means including inlet means opening into

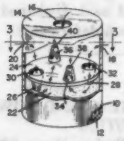
said first compartment, means communicating said inlet means with the interior of said bowl independent of said flushing water passage means, passage means communicating the interiors of said compartments, said housing means including outlet means for said second compartment communicating with said drain line downstream from said water seal, said inlet means, compartments, passage means and outlet means defining an air passage communicating the interior of said bowl with said drain line, said air passage means including one-way air valve means operative to permit airflow through said air passage in one direction from said inlet means to said drain line and to prevent airflow through said air passage in the opposite direction, said one-way air valve being mounted inside second compartment on the exterior surface of said first compartment and being connected to said passage means communicating the interior of said compartments, and selectively operable air pump means serially connected in said air passage for pumping air therethrough in said one direction, said air pump means being disposed in said first compartment and said first compartment being enclosed within said second compartment.

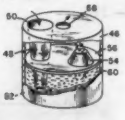
4,365,362

DEVICE IMPROVING SOLUBILITY OF SOLID MATERIAL IN A CLOSED SYSTEM

Garland G. Corey, Milltown, N.J., assignor to Sterling Drug Inc., New York, N.Y.

Filed Apr. 20, 1981, Ser. No. 255,659
Int. Cl.³ E03D *9/02*
U.S. Cl. 4—228 **12 Claims**





1. A device of the class described comprising a container, said container having top, bottom, and side walls,

a partition in the container located intermediate the top and bottom walls thereof, said partition dividing the container into top and bottom portions, the bottom portion being adapted to contain soluble material,

at least two pass-through hollow structures located in the partition;

at least one pass-through structure having its larger end uppermost, and another pass-through structure having its smaller end uppermost,

and a solvent admitting aperture in the upper portion of said container for the reception of the solvent therein above the partition, the solvent passing down through the pass-through structure with its larger end uppermost,

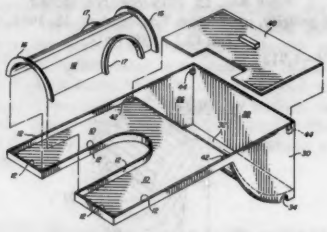
and solution provided thereby tending to rise to and through the other pass-through structure which has its smaller end uppermost into the upper part of the container.

4,365,363

URINE COLLECTING DEVICE FOR PATIENTS IN WHEELCHAIRS

Joseph R. Windauer, 2121 S. Pantano Rd., #438, Tucson, Ariz. 85710

Filed Jan. 12, 1981, Ser. No. 224,112
Int. Cl.³ E03D *13/00*
U.S. Cl. 4—301 **6 Claims**



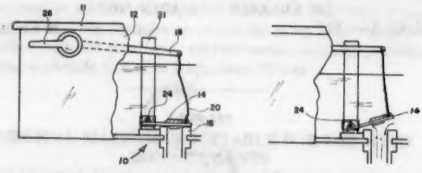
1. A urine collection and storage device for patients in wheelchairs of the type having a seat, centrally located vertical structural crossed pivoted members below the wheelchair seat, and rear structural members, said device comprising means to collect the urine, said collection means having an elongated flat surface bifurcated to form two extending fingers, said fingers adapted to engage and reside on opposite sides of the crossed pivoted structural members of the wheelchair; and means to store the urine so collected, said urine storage means attached to said urine collection means to so receive urine from said urine collection means, said urine storage means including means adapted to engage the rear structural members of the wheelchair; said urine collection means fingers engaging the crossed pivoted structural members and the urine storage means engaging the wheelchair rear structural members so constructed to provide a front-to-back tilt of the collection and storage means whereby urine collected will drain to the storage means.

4,365,364

TOILET FLUSH CONTROL USING A HOLLOW CROWN INSTANT CLOSE FLAPPER VALVE

Rudolph T. Riedel, 7198 Sugarbin Ave., Orlando, Fla. 32807

Filed Jun. 29, 1981, Ser. No. 278,365
Int. Cl.³ E03D *1/34*
U.S. Cl. 4—378 **3 Claims**



1. A flush arrangement for preventing the utilization of an unnecessary amount of water in the flushing of a toilet of the type having a water storage tank and a handle movable to bring about a lifting of a water release device from its seat to accomplish a flushing of the toilet, said water release device being a pivotally mounted flapper valve, said flapper valve being non-buoyant, and having a cavity in its upper portion into which water can enter and occupy at least a portion of the interior of the flapper valve, said flapper valve using no guides, weights or appendages, means connecting a portion of said flapper valve to the handle so that handle manipulation brings

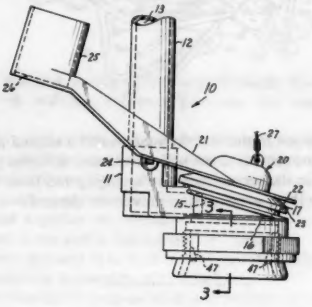
about a pivotal movement of said flapper valve away from its seat, thus to permit a controlled flow of water from the tank, said flapper valve, because of its non-buoyancy, and depending solely on downward water pressure from above, plus suction from outflowing water below, plus the density of the valve itself, returning to its seat as soon as the handle is released, such that the flow of water from the tank will be promptly shut off.

4,365,365

FLUSH VALVE AND MEANS FOR MOUNTING THE SAME

Bruce A. Antunez, 2153 Iron Club Dr., LaVerne, Calif. 91750

Filed Aug. 27, 1981, Ser. No. 296,875
Int. Cl.³ E03D *1/35, 1/06, 5/04*
U.S. Cl. 4—393 **4 Claims**



1. A flush valve to be mounted in a drain port in the bottom wall of a tank, said bottom wall forming at the drain port a peripheral wall with substantial axial and diametral dimensions, said flush valve comprising: a body forming a drain conduit having an opening, a seat on said body surrounding said opening; a plug member having a seal adapted to bear against said seat to close said opening, said plug member being movably mounted to said body to move said seal toward and away from said seat; an internal thread in said drain conduit; a mounting seal having a flange and a tubular skirt, said flange being adapted to bear against said bottom wall inside said tank around said drain port, and said skirt being adapted to fit inside said peripheral wall; a tubular expander, said expander having an external thread adapted to engage said internal thread in said body, and a tapered expander section adapted to enter said skirt and diametrally expand the same against said peripheral wall as the external thread enters said internal thread; and wrench-engaging means inside said expander for engagement by a torque-tool.

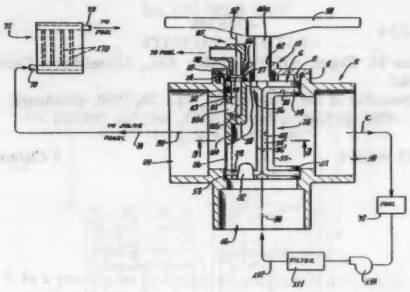
4,365,366

THREE PORT VALVE WITH DRAIN PASSAGE

Robert Ortega, Rancho Mirage, Calif., assignor to Purex Corporation, Lakewood, Calif.

Division of Ser. No. 116,033, Jan. 28, 1980, Pat. No. 4,278,109. This application Dec. 22, 1980, Ser. No. 218,486
Int. Cl.³ E04H *3/16, 3/18*
U.S. Cl. 4—493 **8 Claims**

1. A system that comprises, in combination:
(a) a valve body having a cavity, and first, second and third openings communicating with said cavity,
(b) a rotary valve member in said cavity, said valve member having a generally cylindrical exterior surface and an internal hollow with an end opening in alignment with said first opening,
(c) the valve member having a side opening positioned at substantially a right angle with respect to said end opening, the valve member being rotatable to bring the side opening into or out of alignment with said second opening or said third opening so as to establish flow communication between the first and second openings, or between the first and third openings, via said end and side openings in the valve member,
(d) the valve body having an additional opening and located generally in alignment with said first opening,
(e) there being a removable closure member on the valve body and extending over said additional opening, and



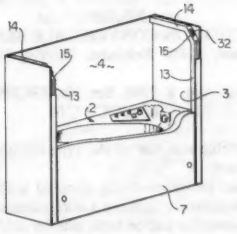
means for rotating the valve member, said means extending through the closure member,
(f) a drain passage having a first portion in the closure and a second portion in the rotary valve member, said portions being brought into endwise communication when the side opening in the rotary valve member is in alignment with one of said second and third openings, and
(g) a solar panel connected in series with said drain passage via one of said second and third openings.

4,365,367

BATHING UNITS WITH DOOR CONTROLLER

Raymond T. Houle, Traverse City; Michael A. Redwine, Acme; Fredrick A. Kilbourn, Suttons Bay, all of Mich.; Stewart D. Reed, El Toro, Calif.; Arthur A. Sills, and John H. Kraft, both of Traverse City, Mich., assignors to Silchor, Traverse City, Mich.

Filed Sep. 15, 1980, Ser. No. 187,338
Int. Cl.³ A47K *3/02*
U.S. Cl. 4—555 **22 Claims**



1. In combination, a bathing apparatus for invalids and the like, comprising a bathtub having a lateral opening in one side thereof for invalid ingress and egress, a door selectively closing said bathtub opening, means for forming a seal between said door and said bathtub when said door is in a closed position, a pair of tracks supported on opposite sides of said door and extending vertically upwardly, and means for slidably mounting said door on said tracks for vertical translation, a counterbalance for said door, comprising:
first and second flexible lines having first ends thereof attached to opposite sides of said door;
an axle rotatably mounted adjacent said bathing apparatus;

first and second spools attached to said axle for rotation therewith, and having second ends of said lines connected with a different one of said spools and wrapped thereabout, whereby axle rotation translates said lines;

a spring having one end fixed and the other end connected with said axle whereby downward translation of said door tenses said spring and counterbalances the weight of said door.

4,365,368

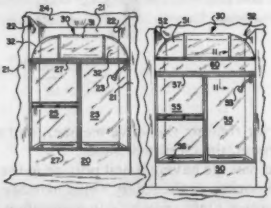
BATHING FACILITY

William H. Boggs, 407 W. Linden Ave., Miamisburg, Ohio 45342

Continuation of Ser. No. 141,191, Apr. 28, 1980, abandoned. This application Jul. 29, 1981, Ser. No. 288,094

Int. Cl.³ A47K *3/22*

U.S. Cl. 4—596 **5 Claims**



1. An enclosure for the top of a domestic bathing facility having a back wall, a pair of side walls and an openable front wall to retain the heat vapors emanating from hot water delivered to the interior of the facility, comprising:

(a) a body of plastic material including a domed main central portion at least the major portion of which is curved about a radius not less than nor substantially greater than one-half the width of said facility between said front and back walls to direct and recirculate hot vapors downwardly therefrom toward the central upper portion of the interior of said facility, and

(b) a flange extending around at least a portion of the periphery of said body for mounting said enclosure on said facility walls.

4,365,369

THREE CUSHION CONVERTIBLE SEAT-BED

Robert W. Plume, 11416 Erdmann, Sterling Heights, Mich. 48078

Filed Aug. 8, 1980, Ser. No. 176,389

Int. Cl.³ A47C *17/16*

U.S. Cl. 5—38 **21 Claims**

1. In a convertible seat-bed of the type comprising:

a stationary base,

first and second panels pivotally coupled with the base and adapted, respectively, to form a seat bottom and seat back in a seat orientation and to form side-by-side bed panels in a bed orientation,

a third panel pivotally coupled with said second panel and adapted to form a third bed panel in said bed orientation,

latching means for securing said first and second panels relative to the base,

and manually actuable means for operating said latching means,

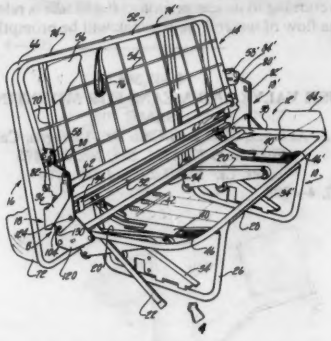
the improvement including,

said third panel including a leg for carrying the rear edge thereof to the bed orientation,

said manually actuable means comprising an actuator lever for thrusting said third panel rearwardly,

said lever being supported by the base and being operatively engageable with but separate from the third panel whereby the third panel is movable independently of the lever after being thrust rearwardly thereby,

said leg being pivotal relative to the third panel between a



first position in the seat orientation and a second position during movement to the bed orientation, different parts of the leg in the second position engaging the floor to support the third panel during movement thereof.

4,365,370

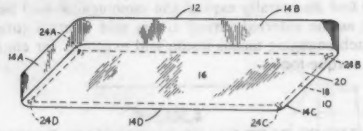
WATER BED MATTRESS

Lynn D. Larson, Rural Route, Walton, Nebr. 68461

Division of Ser. No. 38,375, May 11, 1979, Pat. No. 4,240,859. This application Apr. 10, 1980, Ser. No. 138,987

Int. Cl.³ A47C *27/08*

U.S. Cl. 5—451 **6 Claims**



1. A water bed mattress comprising:

a plastic sheet forming a right regular parallelopiped having a first and a second relatively large flat opposite parallel sides and four narrower sides between said relatively large sides;

the first of said relatively large sides and said narrow sides being integrally formed without seams;

a rim integrally formed with said four narrow sides; and

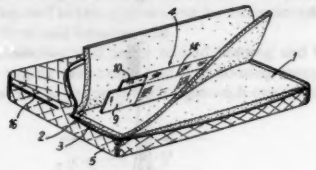
said second of said relatively large sides being sealed to said rim.

4,365,371

MATTRESSES WITH STIFFENERS

Bertrand J. Boussaroque, 163 boulevard Clemenceau, Marcq-en-Baroeul, France

Filed Apr. 18, 1980, Ser. No. 141,721
Claims priority, application France, May 29, 1979, 79 14645
Int. Cl.³ A47C *27/14, 27/16*
U.S. Cl. 5—462 11 Claims



1. In a mattress having stiffeners, particularly foam mattresses, having padding or foam portions, the improvement wherein

one said portion is formed with first slits made by at least one perpendicular incision on one side of the portion of the mattress, the end of each incision constituting a hinge for the padding portions of the mattress which remain connected together on opposite sides of the incision, and which is opened in the manner of a book,

stiffeners disposed in at least one of said slits, said stiffeners constituting a plurality of stiff laths,

tubular sheaths of cross-sections and profiles corresponding to said laths, said tubular sheaths are connected to each other, said laths are disposed in said tubular sheaths, respectively,

a padded and quilted covering being formed on the sides of the mattress with another slit over at least a portion of a periphery,

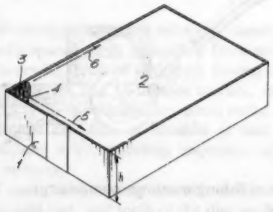
a slide fastener disposed in said another slit.

4,365,372

MATERIALS AND METHODS FOR CULTURE OF NESTING INSECTS

Frederick A. Norman, Banksia Park, Australia, assignor to Internationale Octrooi Maatschappij "Octropa" B.V., Rotterdam, Netherlands

Filed Oct. 20, 1980, Ser. No. 197,411
Claims priority, application Australia, Oct. 25, 1979, PE1065
Int. Cl.³ A01K *47/00*
U.S. Cl. 6—1 17 Claims



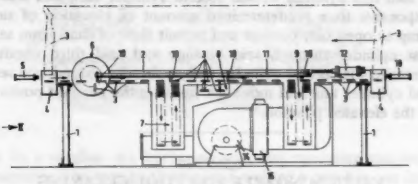
12. A nesting arrangement suitable for nesting insects including lucerne leaf cutter bees and bumble bees, comprising a container having an open face and packed with a plurality of tubes each with one open end and one end closed by a rear wall of the container, said tubes being fixed in place by wax in said container with the closed ends of said tubes closed by wax, and their cross-section and length being adapted to the nesting requirements of the insects.

4,365,373

PROCESS FOR THE DYEING AND FIXING OF KNITTED ARTICLES OF CLOTHING

Willi Witte, Gevelsberg, and Wulf Böing, Hagen, both of Fed. Rep. of Germany, assignors to Proll & Lohmann Betriebs - GmbH, Hagen, Fed. Rep. of Germany

Filed Sep. 26, 1980, Ser. No. 191,473
Claims priority, application Fed. Rep. of Germany, Oct. 4, 1979, 2940267
Int. Cl.³ D06B *3/30*
U.S. Cl. 8—150 4 Claims



1. In a process for the continuous dyeing and fixing of articles of clothing having fibers and comprising knitted socks, stockings, panty hose or similar knitted articles of clothing of highly elastic material, comprising the steps of pulling the articles of clothing onto elongated flat forms defining a lengthwise direction of the articles of clothing, and passing said flat forms with the articles of clothing thereon in succession through different treatment stations for at least the dyeing, the fixing, and drying, the improvement comprising

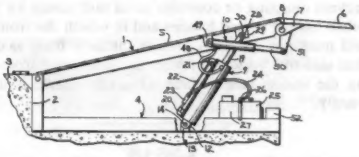
continuously passing said flat forms fixed, in a non-rotatable orientation with a flat side of the forms lying substantially parallel to the ground with respect to a longitudinal axis as well as a transverse axis of the flat side, through the individual treatment stations with the articles of clothing thereon and with the fibers of the articles of clothing extending in the lengthwise direction of the articles of clothing, each of said forms being separated from each other and parallel to each other.

4,365,374

HYDRAULICALLY OPERATED DOCKBOARD

David E. Bennett, Waukesha, Wis., assignor to Kelley Company Inc., Milwaukee, Wis.

Filed Aug. 4, 1980, Ser. No. 175,143
Int. Cl.³ E01D *1/00*
U.S. Cl. 14—71.7 13 Claims



9. A hydraulically operated dockboard, comprising a supporting structure, a ramp structure hinged at its rear edge to the supporting structure and movable from a generally horizontal position to an upwardly inclined position, a lip hinged to the forward edge of the ramp and movable between a downwardly hanging pendant position and an extended position, a first hydraulic cylinder unit interconnecting the supporting structure and the ramp structure and including a first cylinder and first piston means slidably disposed within the cylinder, said first cylinder being connected to one of said structures and said piston means being connected to the other of said structures, said piston means including a rod slidably disposed within an opening in a head of the first cylinder, a first conduit

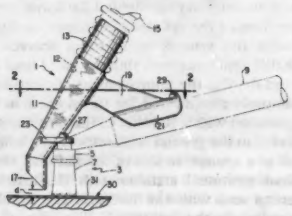
interconnecting opposite ends of said first cylinder, a reservoir for hydraulic fluid, a second conduit interconnecting said reservoir and said first conduit, pumping means operably connected to said reservoir for pumping fluid from the reservoir and through said second and first conduits to said first cylinder, a second hydraulic cylinder unit interconnecting the ramp structure and the lip, third conduit means connecting the first cylinder with said second cylinder unit and said third conduit means including a passage disposed in said head, said passage being normally closed to prevent flow of fluid from the interior of said first cylinder to said second cylinder unit, and means responsive to a predetermined amount of elevation of said ramp to open said passage and permit flow of fluid from said first cylinder through said passage and said third conduit means to the second cylinder unit to thereby extend said second cylinder unit and move the lip from the pendant position to the elevated position.

4,365,375

VACUUM NOZZLE FOR POOL CLEANING

Jack Grodin, and Bessie Grodin, both of 1332 E. Oakey Blvd., Las Vegas, Nev. 89104

Filed Oct. 29, 1980, Ser. No. 201,989
Int. Cl.³ E04H *3/20*
U.S. Cl. 15—1.7 **6 Claims**



1. A vacuum nozzle for removing leaves and debris from an underwater surface and adapted for use in combination with a swimming pool brush which has a plurality of downwardly directed bristles, said nozzle comprising:

a housing having a centrally disposed channel extending therethrough, a vacuum hose coupling formed with said housing and opening into said channel, and an elongated mouth, having a front edge and a rear edge, opening into said channel;

means for attaching said housing to said brush in a position in which the mouth is spaced forwardly from the bristles to prevent clogging or constriction of said mouth by leaves or debris lodged in said bristles and in which the front edge of said mouth is spaced a greater distance from said surface than said rear edge to prevent the front edge from contacting the underwater surface when the nozzle is tilted forwardly.

4,365,376

MOUTH CLEANING DEVICE

Takeshi Oda; Toshio Tanabe, and Yoshimasa Tanaka, all of Kadoma, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

PCT No. PCT/JP80/00043, § 371 Date Nov. 14, 1980, § 102(e) Date Nov. 14, 1980, PCT Pub. No. WO80/01873, PCT Pub. Date Sep. 18, 1980
PCT Filed Mar. 13, 1980, Ser. No. 217,002
Claims priority, application Japan, Mar. 15, 1979, 54-30855
Int. Cl.³ A46B *13/06*
U.S. Cl. 15—22 R **6 Claims**

1. A mouth cleaning device, comprising:

a hollow case which forms a hand held gripping part and which has an electric motor therein;

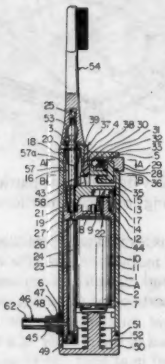
a converting means for converting rotary motion of said motor to a reciprocal turning motion;

a driving rod reciprocally turned by said converting means;

a water receiving port having a hose connected to a water feeding means;

a first water feeding path communicating with said water receiving port;

a second water feeding path being formed within said driving rod and communicating with said first water feeding path;



a mount for selectively receiving a brush member and a nozzle member being formed on said driving rod, said brush and nozzle members being interchangeably mounted; and

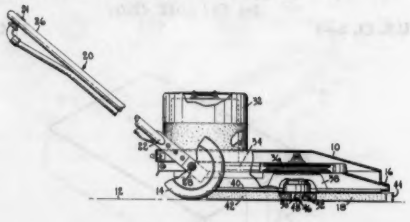
a change-over switch for selectively actuating said motor when said brush member is mounted to said driving rod and actuating said water feeding means when said nozzle member is mounted to the driving rod.

4,365,377

FLOOR POLISHING MACHINE

Mike J. Todd, Eagan, and Jeffrey A. Lee, Crystal, both of Minn., assignors to H. B. Fuller Company, St. Paul, Minn.

Filed Jan. 13, 1981, Ser. No. 225,511
Int. Cl.³ A47L *11/14*
U.S. Cl. 15—98 **3 Claims**



1. A floor polishing machine, comprising:

(a) a housing;

(b) a pair of coaxial wheels fixed positionally relative to, and rotatably attached rearwardly of, said housing, mounting said housing for movement over a horizontal floor surface, said wheels having peripheral edges engaging the horizontal surface as they rotate;

(c) a generally U-shaped movement imparting handle having first and second ends and a bail portion therebetween, each of said handle ends being operatively connected to said housing at the axis of said wheels;

(d) a compressible, circular polishing pad, said pad having a

floor engagement surface for engaging the floor substantially along the engagement surface's total area and defining a plane generally tangent to said wheels at locations thereon engaging the horizontal surface, said pad further having a circular aperture, coaxial therewith, formed therethrough;

(e) means suspending said pad in a fixed position relative to said housing;

(f) means for driving said pad rotationally about a generally vertical axis through its center;

(g) a caster disposed in said aperture and for movement toward and away from said housing; and

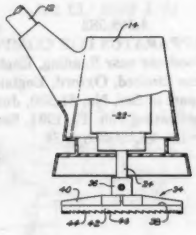
(h) means connecting said caster to said housing and for increasingly urging said caster and said housing away from one another as they progressively approach one another.

4,365,378

CARPET AND FABRIC CLEANING MACHINE

John R. Springer, Overland Park, Kans., assignor to Nu-Co Industries Inc., Overland Park, Kans.

Filed Mar. 5, 1981, Ser. No. 240,994
Int. Cl.³ A47L *11/14*; B24B *29/00*
U.S. Cl. 15—98 **4 Claims**



1. A lightweight machine for cleaning generally flat surfaces including:

a portable housing;

means operably connected to said housing for facilitating manual manipulation of said cleaning machine;

a generally flat cleansing pad for engaging said surfaces;

motive means operably mounted to said housing and capable of delivering a high rotational torque;

means operably coupling said motive means and said pad comprising

a disc operably secured to said motive means for rotation by the latter,

a plurality of circularly arranged relatively closely adjacent, equidistantly spaced teeth depending from said disc and integral therewith, each of said teeth having a generally flat upright surface and an oblique surface, each of said flat surfaces lying in an imaginary plane radial of the disc and facing the direction of rotation of said disc, said oblique surfaces interconnecting respective adjacent upright flat surfaces;

a section of open mesh netting operably connected to and supporting said pad, said teeth of the disc each being of a size permitting a significant portion thereof to be received within respective associated proximal openings of said mesh netting with the flat surface thereof variably engaging the netting,

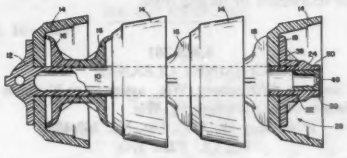
the teeth being located adjacent the perimeter of the disc and engaging the netting along a series of closely spaced points arranged in a circular pattern affording a positive mechanical interlocking of the netting and thereby the pad to the disc during use of the machine.

4,365,379

PIPELINE PIG HAVING IMPROVED END PLATE RETENTION

Larry M. Neff, Tulsa, Okla., assignor to S.U.N. Engineering, Inc., Tulsa, Okla.

Filed Apr. 13, 1981, Ser. No. 253,890
Int. Cl.³ B08B *9/04*
U.S. Cl. 15—104.06 R **6 Claims**



1. In a pipeline pig having at least one operating member dimensioned to engage the interior wall of a pipeline, an improved end retainer means comprising:

a cylindrical shaft of flexible plastic material adaptable to receive at least one operating member thereon, at least the rearward end portion being tubular and having an integral enlarged diameter portion adjacent the rearward end, and having a plurality of spaced-apart longitudinal slots formed in the rearward end, the slots being in planes of the shaft axes and extending forwardly past the enlarged diameter portion;

an end plate having an opening therethrough the diameter of which is slightly larger than the diameter of said shaft and smaller than said shaft enlarged diameter portion, the end plate being insertable onto said shaft rearward end past said enlarged diameter portion by deflecting the portions of the shaft rearward end between said slots inwardly;

a plug member positioned in said tubular shaft rearward end serving to prevent the inward deflection of the portions of the shaft rearward end between said slots; and

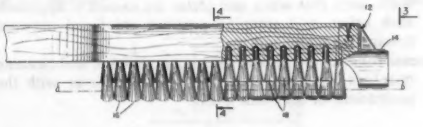
means to retain said plug member in position within said tubular shaft end.

4,365,380

BRUSH-LIKE CLEANING TOOL FOR CLEANING GRILLS AND OTHER STRUCTURES HAVING ELONGATE ROD-LIKE MEMBERS

Fred G. Fassler, 7 Oreca Ter., Monroe, N.Y. 10954

Continuation-in-part of Ser. No. 951,648, Oct. 16, 1978, abandoned. This application Oct. 19, 1979, Ser. No. 86,349
Int. Cl.³ A47L *17/00*
U.S. Cl. 15—111 **10 Claims**



1. A cleaning tool for cleaning cooking grills or like structures made of of rod-like members, comprising:

a relatively elongate single-piece tool body adapted to be gripped in a person's hand and having a bottom surface;

scraper means formed generally at an end of said tool body and providing a scraper edge extending generally below the bottom surface of said tool body, said scraper edge being a permanent structure in the form of an almost-closed-loop two-dimensional figure and said scraper means having an opening proportioned to permit a rod-like member to pass through said opening and become generally encircled within said scraper edge; and

a plurality of brush bristles affixed to the bottom surface of said tool body and extending generally in the same direc-

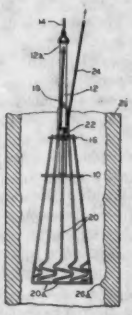
tion as said scraper edge, such that when the rod-like member is generally encircled within said scraper edge, the person can apply a scraping action against virtually the entire surface of the rod-like member simply by changing the direction in which he urges the tool body against the rod-like member and, if need be, rotating the tool body slightly about the rod-like member, permitting said tool to be used to apply both a scraping action and a brushing action to the rod-like member without requiring the tool to be reoriented or turned over.

4,365,381

CHIMNEY CLEANER

Orin E. Neuman, Wittenberg, Wis., assignor to Neuman Chimney Cleaners, Inc., Wittenberg, Wis.

Filed May 28, 1981, Ser. No. 268,485
Int. Cl.³ F23J 3/00
U.S. Cl. 15—243 **6 Claims**



1. A chimney cleaner for removing soot deposits from the inside walls of chimneys, which walls have protrusions of mortar and the like, comprising:

a vertical support member secured orthogonally at its lower end to a lower plate;

an upper plate having an aperture near its center such that said vertical support member passes slidably through it, said upper plate thus being approximately vertically aligned with, smaller than, and approximately the same shape as said lower plate;

a plurality of rod-like cleaning members looped pivotably through apertures around the perimeter of said upper plate, passing slidably through similar apertures around the perimeter of said lower plate, and ending in z-shaped scraping portions for engagement with the inside chimney walls, such that when said plates are caused to approach each other, said scraping portions are faced outward toward the walls; and

means for disengaging said scraping portions of said cleaning members from any snags they may encounter with the protrusions of the inside walls.

4,365,382

CHIMNEY CLEANING SYSTEM

Robert G. Korfmann, R.D. #1, Box 222A, and Richard C. Bennett, R.D. #1, Box 172, both of Wyalusing, Pa. 18853

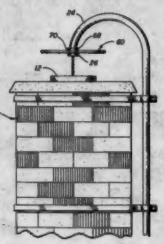
Filed Jan. 19, 1981, Ser. No. 226,410
Int. Cl.³ F23J 3/00
U.S. Cl. 15—249 **2 Claims**

1. A chimney cleaning system, comprising:

a cleaning head, constructed of a plurality of metal sections, each of said sections having a sharpened lower end for more efficiently removing soot and creosote from an inner surface of said chimney, said cleaning head being formed to adapt to the interior dimensions of a chimney to be cleaned;

a support system for said cleaning head, said support system comprising a cable attached to said cleaning head, said cable being supported by a tubular support member which is attached to an exterior of said chimney and which passes said cable to a user at ground level; and

an anti-down draft cap affixed to said tubular support member



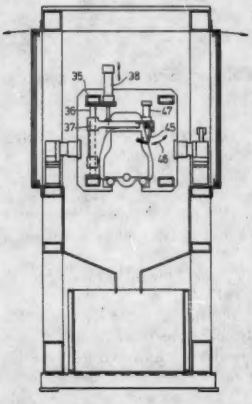
and positioned at a predetermined distance above a top of said chimney for reducing down drafts into said chimney and for protecting said chimney from rain and other forms of precipitation, said anti-down draft cap further comprising a plurality of radially extended slots therein to allow free passage of wind and exhaust gases from said chimney.

4,365,383

CLEANING APPARATUS FOR COMPONENTS

John M. Bartlett, Woodcote near Reading, England, assignor to Elan Pressure Clean Limited, Oxford, England

Continuation-in-part of Ser. No. 51,500, Jun. 25, 1979, abandoned. This application Feb. 17, 1981, Ser. No. 234,715
Int. Cl.³ A47L 5/38
U.S. Cl. 15—302 **14 Claims**



1. A Cleaning apparatus for cleaning components such as vehicle engine blocks, said apparatus comprising a cleaning chamber, support means for supporting a component within the cleaning chamber during cleaning, pump means, a water manifold in said cleaning chamber for receiving water from said pump means at a pressure in excess of 1000 psi, said water manifold being mounted for movement relative to the support means for washing the component with a flow rate of water less than 200 gallons per minute at said pressure in excess of 1000 psi, said water manifold including a main washing head of a plurality of jets and at least one selective washing head movable relative to the main washing head and the component to effect selective washing of the component, valve means associated with each of the washing heads and operable on actuation

to open or close the supply of water to the respective washing heads whereby the application of the water via the washing heads can be controlled, recycling means for dirty water produced by washing the component, said recycling means including means for collecting the dirty water, filter means for filtering the dirty water for re-use and a storage tank for recycled water, diverter valve means between the pump means and the water manifold, said diverter valve means having an inlet and first and second outlets whereby, in a first position, it supplies water at said pressure in excess of 1000 psi to the water manifold on demand and, in a second position, it returns the water to the storage reservoir, and means for drying the components.

4,365,384

CONCEALED MULTI PINTLE LATCH HINGE

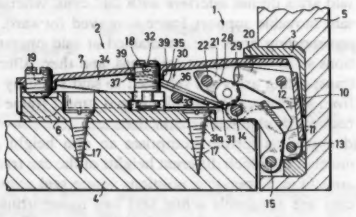
Theodor Vitt, Cologne, Fed. Rep. of Germany, assignor to Prameta Prazisionsmetall -und Kunststofferzeugnisse G. Baumann & Company, Cologne, Fed. Rep. of Germany

Filed May 8, 1980, Ser. No. 147,789

Claims priority, application Fed. Rep. of Germany, May 9, 1979, 2918660

Int. Cl.³ E05F *1/14*

U.S. Cl. 16—333 **10 Claims**



1. A spring hinge assembly for use as a concealed furniture hinge, said assembly comprising:

(a) a frame hinge section and a leaf hinge section connected by link members each having two pivot points and being movable between an open and a closed position,

(b) the frame hinge section comprises a base plate and a link supporting plate,

(c) said hinge sections being under spring action with respect to one another with the leaf hinge section being held by a spring latch in said closed position,

(d) one link member having an extension on its end projecting into the frame hinge section,

(e) the extension including a control cam which coacts with a lever means,

(f) said lever means including a roller disposed on a lever element which is under spring action and is linked to the frame hinge section,

(g) biasing means is located on that side of the lever means remote from the link supporting plate,

(h) said biasing means being effective to simultaneously engage the lever means and the link supporting plate and to bias the lever means and supporting plate outwardly from the base plate,

(i) the link supporting plate includes an eye-boss means which extends toward the base plate and receives an adjusting screw for the link supporting plate,

(j) said biasing means includes a leaf spring having an opening to surround said eye-boss means.

4,365,385

HINGE CLAMP

Akio Gotoh, Yokohama, Japan, assignor to Katoh Electrical Machinery Co. Ltd., Tokyo, Japan

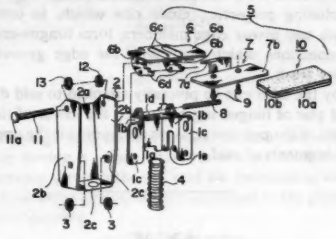
PCT No. PCT/JP79/00255, § 371 Date Jun. 9, 1980, § 102(e) Date May 27, 1980, PCT Pub. No. WO80/00688, PCT Pub. Date Apr. 17, 1980

PCT Filed Oct. 9, 1979, Ser. No. 198,971

Claims priority, application Japan, Oct. 9, 1978, 53/138761[U]

Int. Cl.³ E05D *5/06*

U.S. Cl. 16—382 **1 Claim**



1. A hinge for opening and closing a cover of a record player, comprising in combination:

(a) a cover retainer (5) with a pair of hinge plates (6, 7);

(b) side plate portions (6b, 6b) on one of said hinge plates (6), a hinge pin (8) pivotally supported by said side plate portions (6b, 6b), said side plate portions defining a receiving space and being provided with a pair of anchoring lugs (6d, 6d);

(c) a side portion on said other hinge plate (7), said side portion being received by and fixed in said defined space and being retained substantially at its center point by said anchoring lugs (6d, 6d) so as to prevent said other hinge plate (7) from rotating back away from the one hinge plate (6); and,

(d) at least one of said hinge plates (6, 7) being provided with attaching screws (9, 9) for fixing the cover inserted in said cover retainer.

4,365,386

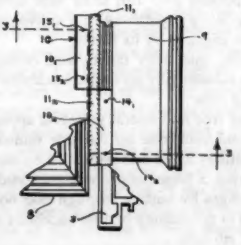
HINGE DOOR ASSEMBLY

John L. Lowery, 1864 Country Club Dr., Baton Rouge, La. 70808

Filed Mar. 3, 1981, Ser. No. 239,906

Int. Cl.³ E05C *5/06*; E05F *1/10*

U.S. Cl. 16—382 **7 Claims**



1. Apparatus constituting a hinge for mounting a door to a door jamb in hinged relationship, the door jamb being formed from a longitudinally, edge grooved metal frame, which comprises

a pin,

a pair of hinge segments of identical cross-section, constituted of

tubular portions fitted together in tendem and pivotally attached one to the other via said pin passed through the openings through each of said tubular portions,

L-shaped projections connecting via a terminal end to and extending from said tubular portions, said L-shaped projections including webbed portions directly connected at right angles to said tubular portions, and planar edge members extended at right angles from said webbed portions to which said planar guide members are directly connected via a terminal end, said planar edge members including projecting guide ribs which, in combination with said planar edge members, form tongue-and-groove connections which mate with the edge groove of said door jamb

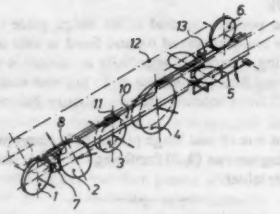
whereby the door can be pivotally attached to said door jamb via said pair of hinged segments, and the lower of the hinged segments of the pair can serve as a support for the upper of the hinged segments of said pair.

4,365,387

METHOD AND APPARATUS FOR FILLETING FISH

Franz Hartmann, Bad Oldesloe, and Manfred Krohn, Bad Schwartau, both of Fed. Rep. of Germany, assignors to Nordischer Machinenbau Rud. Baader, Lubeck, Fed. Rep. of Germany

Filed Dec. 24, 1980, Ser. No. 219,947
Int. Cl.³ A22C *25/16*
U.S. Cl. 17—52 **7 Claims**



1. A method of filleting a decapitated fish of substantially circular cross-section, said fish having at least a back, a belly including belly flaps essentially defining a belly cavity, a backbone, lateral vertebral appendages projecting from said backbone, belly spokes, back spokes, and dorsal fins having fin holders, said method including the following steps:

(a) transporting said fish belly side down and head end leading along a pathway in a conveying direction, with the fish engaged by its flanks;

(b) opening said belly cavity and cutting free said belly spokes substantially up to said backbone by means of belly filleting cuts;

(c) cutting free said lateral vertebral appendages projecting from said backbone on the side remote from said belly substantially up to said backbone by means of rib cuts;

(d) severing a bone strip containing said lateral vertebral appendages by cutting through said bones on both sides of, and in the vicinity of, said backbone substantially as far as said rib cuts;

(e) cutting free said back spokes to a point adjacent to said fin holders of said dorsal fins by means of back filleting cuts performed from the belly side of said fish; and

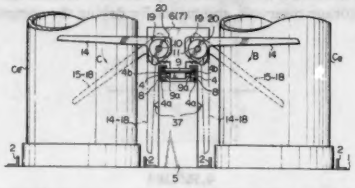
(f) separating the fillets from the bone structure by means of severing cuts from said back of said fish on both sides of said dorsal fins as far as said back filleting cuts.

4,365,388

APPARATUS FOR AUTOMATICALLY CHANGING CANS OF A SPINNING MACHINE

Mitsuo Mori, Toyota, and Yoshihisa Suzuki, Chiryu, both of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi, Japan

Filed Sep. 4, 1980, Ser. No. 184,177
Claims priority, application Japan, Sep. 10, 1979, 54/116585
Int. Cl.³ B65H *54/80*
U.S. Cl. 19—159 A **8 Claims**



1. An apparatus for automatically changing cans of a spinning machine comprising:

a movable support frame which can be reciprocated along a transporting direction of the cans; and

a plurality of can transporting arms which are substantially equidistantly arranged on said support frame and which can alternately be located at operating positions where said arms transport said cans and stand-by positions where said arms do not interfere with said cans, whereby, when said movable support frame is moved forward, said can transporting arms are maintained at said operating positions so as to transport said cans, and then, after said can transporting arms are returned to said stand-by positions from said operating positions, said supprt frame is moved backward, characterized in that,

said apparatus further comprises an arm height adjusting member by which different heights of the can transporting arms in said operating positions where said arms abut the cans are adjustable while said can transporting arms in said stand-by positions are almost at the same level as each other.

4,365,389

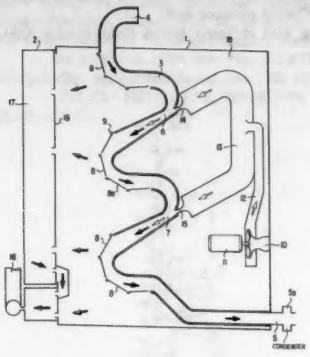
APPARATUS FOR CLEANING TEXTILE FIBER TUFTS

Wolfgang Beneke, Mönchen-Gladbach, and Ferdinand Leifeld, Kempen, both of Fed. Rep. of Germany, assignors to Trützschler GmbH & Co. KG, Mönchen-Gladbach, Fed. Rep. of Germany

Filed Sep. 29, 1980, Ser. No. 196,108
Claims priority, application Fed. Rep. of Germany, Sep. 25, 1979, 2939640; Aug. 22, 1980, 3031632
Int. Cl.³ D01B *1/00*
U.S. Cl. 19—200 **35 Claims**

1. Apparatus for cleaning and removing dust from textile fiber tufts, comprising means defining a channel for the passage of fiber tufts and including an air injector nozzle for introducing fresh air into the channel, means defining an air separation zone associated with the channel for separating air from the tufts in the channel, and suction means for extracting air from the air separation zone, wherein said means defining an air separation zone comprise at least one comb disposed a short distance downstream of said injector nozzle at a location to

enable tufts being carried through said channel to abut on said comb, said comb being composed of a plurality of teeth extending generally in the direction of flow of the stream of air introduced by said nozzle.



4,365,390

CLIP FOR WRITING UTENSIL

Hidehei Kageyama, and Takahiko Suzuki, both of Saitama, Japan, assignors to Kotobuki & Co., Ltd., Saitama, Japan

Filed Jul. 17, 1980, Ser. No. 169,829

Claims priority, application Japan, Mar. 29, 1980, 55-41757[U]

Int. Cl.³ B43K *25/00*

U.S. Cl. 24—11 R 2 Claims

1. A clip for writing utensils comprising a holder, a clip base made integral with said holder and projecting laterally therefrom, said clip base including aligned grooves in opposite faces thereof extending lengthwise of said clip base, said grooves being spaced from said holder and extending substantially parallel thereto, a clip piece secured to said clip base, said clip piece including a pair of insertion arms extending substantially parallel with each other, said arms being slidably received in said grooves for assembly with said clip base, each of said arms being provided at its inside surface with an engaging portion having saw-tooth shaped indentations, said engaging portions being struck into the base surface of each of said grooves after assembly on said clip base, to form depressions in said base surfaces so as to firmly secure said clip piece to said clip base.

4,365,391

DEVICE FOR LOCKING AND ADJUSTING STRAPS FOR LIFTING AND SECURING APPARATUSES

Jean-Pierre Chapalain, 22, Rue de Mery, 95310 Saint-Ouen-l'Aumone, France

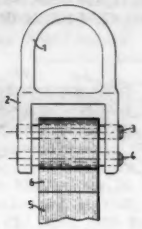
Filed Jul. 17, 1980, Ser. No. 169,654

Claims priority, application France, Jul. 18, 1979, 79 18580

Int. Cl.³ A44B *11/00*

U.S. Cl. 24—197 2 Claims

1. A device for locking and adjusting the length of a lifting and securing strap, comprising a suspension element disposed in a plane, a clevis integral with said element having parallel arms, at least two superposed holes in each arm of said clevis, the holes in one arm of said clevis facing the holes in the other arm of said clevis, at least two superposed shafts removably disposed in said holes, a case fixed on said clevis having one side disposed out of the plane of said suspension element, said side being bent back substantially at right angles at one end thereof towards a side of said case which is opposite to said one side of said case so as to form therewith a slit in the plane of said suspension element, and a strap having an active strand passing through said slit and wound around said shafts, and said strap having a return strand in contact with the active strand leaving through the slit, said slit maintaining the active strand of the strap against the return strand in the plane of the suspension member.



4,365,392

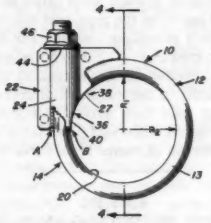
GAS-TIGHT EXHAUST CLAMP FOR TUBING SLIP-JOINTS

John E. Heckethorn, Dyersburg, Tenn., assignor to Heckethorn Manufacturing Company, Dyersburg, Tenn.

Filed Nov. 13, 1978, Ser. No. 960,036

Int. Cl.³ A44B *21/00*; F16L *25/00*

U.S. Cl. 24—256 8 Claims

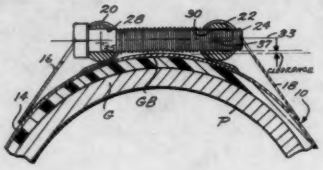


1. A pipe or tube clamp comprising: a substantially rigid discontinuous arcuate ring member formed from circular stock and having a substantially straight leg portion extending from a first end thereof; a lug member disposed between said first end of the ring member and a second end thereof, said second end being fixedly joined to said lug member, the inner circumferential surface of the ring member forming a continuous circular arc with an arcuate surface formed in the lug member, the arcuate surface of the lug member defining a continuous arc extending between the ends of the ring member and forming an uninterrupted continuation of the arc defined by the ring member, the lug member further comprising a housing which receives the leg portion of the ring member therethrough, and including a web extending from one side of the housing, the web being joined to the second end of the ring member and having an arcuate inwardly disposed edge surface which forms at least a portion of the arcuate surface formed in the lug member, the housing having spaced flared arcuate edge surfaces at the end thereof at which the ring member extends into the housing, said surfaces forming at least an additional portion of the arcuate surface formed in the lug member; and means disposed on the distal end of the leg portion for tensioning the ring member to reduce the diameter of the clamp.

4,365,393
SINGLE AND MULTIPLE SECTION PIPE REPAIR CLAMPS

William L. Hauffe, Warrensburg, and Joseph L. Daghe, Decatur, both of Ill., assignors to Mueller Co., Decatur, Ill.

Filed May 11, 1981, Ser. No. 262,776
Int. Cl.[3] F16L *33/04*
U.S. Cl. 24—279 17 Claims



1. A low profile pipe clamp for encircling a pipe, said pipe clamp having a use for a wide range of varying outside diameters of a particular size of pipe and comprising:

a split flexible band means having at least one pair of opposed spaced apart looped ends extending in a lengthwise direction of the pipe when the band means encircles the pipe, said looped ends drawn toward one another to tighten said band means about the pipe;

a pair of elongated trunnion loading bars, one of said trunnion loading bars being carried in one of said looped ends and the other of said elongated trunnion loading bars being carried in the other of said looped ends, said trunnion loading bars being rotatable relative to the respective looped ends when the looped ends are drawn together; and

bolt means coacting with said trunnion bars for moving said trunnion bars toward one another and drawing said opposed looped ends toward each other so that said band means tightly encircles the pipe, said bolt means including at least one bolt extending through the trunnion bars in each of the looped ends of said opposed looped ends, said bolt having a longitudinal axis extending transverse of and spaced outwardly of the longitudinal axes of said trunnion bars, whereby said bolt avoids interference with said flexible band means when said pipe clamp is used on a pipe having a maximum diameter for a particular size of pipe.

4,365,394
METHOD FOR PRODUCING AN INTERLACED MULTIFILAMENT YARN

Tadayuki Matsumoto, Mishima; Kozo Imaeda, Shizuoka; Masatoshi Mineo, and Kiyoshi Nakagawa, both of Mishima, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

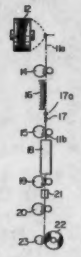
Division of Ser. No. 865,667, Dec. 29, 1977, abandoned, which is a division of Ser. No. 705,145, Jul. 14, 1976, Pat. No. 4,115,988.
This application Mar. 22, 1979, Ser. No. 22,934
Claims priority, application Japan, Jul. 18, 1975, 50-87372
Int. Cl.[3] D02G *1/20, 1/16;* D02J *1/08, 1/16*
U.S. Cl. 28—258 5 Claims

1. Method for producing an interlaced multifilament yarn comprising, in combination:

previously rubbing and scratching a material multifilament yarn with such intensity that individual filaments constituting said filament yarn are not substantially broken by a rotary rough surface member having sharp projections which are smaller than the cross-sectional diameter of the individual filaments of said material yarn;

then diffusing at least one jetted fluid, jetted in the yarn running direction along a predetermined yarn passage from a jetting aperture of a supply conduit through a nozzle formed with a rectifying and diffusing portion having a substantially uniform cross-section of limited axial extent formed only in the vicinity of said jetting aperture, and the width of said jetting aperture being smaller than said rectifying and diffusing portion, said supply conduit being fixed with respect to members defining said yarn passage, said fluid being diffused along a direction parallel to said yarn passage in said rectifying and diffusing portion; and

impinging said diffused jetted fluid against said running

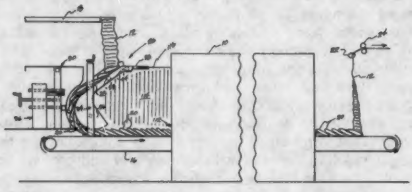


material multifilament yarn so that said individual filaments of said multifilament yarn mostly vibrate in a direction substantially parallel to a plane defined by the yarn running direction and the fluid jetting direction, the vibration taking place in a section of said yarn passage facing said rectifying and diffusing portion.

4,365,395
APPARATUS FOR HANDLING TEXTILE FILAMENTARY MATERIAL

Zachry G. Brantley, Spartanburg, S.C., assignor to Hoechst Fibers Industries, Division of American Hoechst Corporation, Spartanburg, S.C.

Filed Mar. 28, 1980, Ser. No. 134,949
Int. Cl.[3] B65H *17/50;* D02C *1/18*
U.S. Cl. 28—281 9 Claims



1. A stationary tow inverter for depositing a continuous length of tow onto the surface of a moving conveyor in a plurality of overlapping layers with preceding layers of the tow overlying next succeeding layers in the direction of movement of the conveyor, comprising:

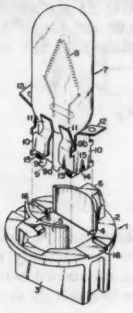
tow guiding means defining a first stationary support surface for receiving a continuous length of tow deposited thereon in a plurality of overlapping layers with preceding layers underlying next succeeding layers deposited thereon, and a second stationary support surface spaced from said first surface and cooperating therewith to gravitationally convey and guide the overlapping layers of tow through a downwardly curved path to reverse the direction of lay of the overlapping layers and deposit the same onto a conveyor surface with preceding layers of tow overlying next succeeding layers in the direction of movement of the conveyor.

4,365,396

METHOD FOR MANUFACTURING A BASELESS INCANDESCENT LAMP ASSEMBLY

Massaharu Baba, Yokohama; Kiyokazu Honda, Zushi, and Akiyoshi Hashima, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 4, 1980, Ser. No. 213,077
Claims priority, application Japan, Dec. 20, 1979, 54-165986
Int. Cl.³ H01R *33/06*; H01K *3/06*
U.S. Cl. 29—25.13 **10 Claims**



1. A method for manufacturing a baseless incandescent lamp having a flattened seal section and external lead wires led outward from said flattened seal section; a main socket body having a lamp holding chamber to contain the flattened seal section of said baseless incandescent lamp; and a pair of conductive holding members disposed inside the lamp holding chamber of said main socket body to hold and pinch the flattened seal section of said baseless incandescent lamp and electrically connected with said external lead wires, said method comprising:

a step for holding the flattened seal section of said baseless incandescent lamp between said pair of holding members;

a step for inserting said holding members into the lamp holding chamber of said main socket body while keeping the flattened seal section of said baseless incandescent lamp held with said holding members; and

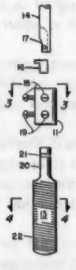
a step for softening part of said main socket body by heating to deform the same, thereby forming fixing portions to prevent said inserted holding members from slipping out of said lamp holding chamber.

4,365,397

FILE TOOL ATTACHMENT

Glenn D. Felpel, 4917 Macmont Cir., Powell, Tenn. 37849

Filed Oct. 7, 1980, Ser. No. 194,887
Int. Cl.³ B23D *71/00*, *71/02*
U.S. Cl. 29—76 R **4 Claims**



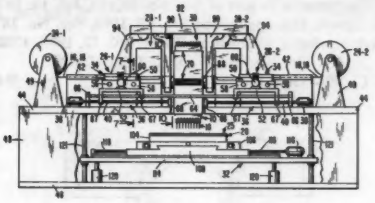
1. An attachment for commercially available sabre saw power device said device having a power driven reciprocating bar, comprising a tool adapter of configuration to engage said bar and acting in cooperation with and substantially coaxial with said bar, means for clamping said adapter to said bar in rigid manner, a spacer member being substantially rectangular of thickness and configuration such as to conform to a slot in said bar and being provided with a tab which engages in tight fit a slot provided in said adapter, means for clamping said file tool in rigid manner to said adapter.

4,365,398

METHOD OF AND APPARATUS FOR ASSEMBLING INTERMEDIATE-WEB HELD TERMINAL PINS

William M. Chisholm, Midlothian, Va., assignor to Western Electric Company, Inc., New York, N.Y.

Division of Ser. No. 965,219, Nov. 30, 1978, Pat. No. 4,265,508. This application Jul. 31, 1980, Ser. No. 174,061
Int. Cl.³ H05K *3/00*; B23P *23/00*
U.S. Cl. 29—845 **10 Claims**



1. A method of assembling terminal pins with a support structure where each pin is formed with a free insertion end to be inserted into one of a plurality of apertures in the support structure, and a free connector end for ultimate assembly with a connector, and where the pins are held in a strip by webs formed integrally with and between intermediate portions of adjacent pins, which comprises the steps of:

positioning the free insertion end of each of a plurality of the terminal pins of the strip into a movement-confining portion of a pin transporter;

removing each of the webs between the intermediate portions of adjacent pairs of the terminal pins positioned in the pin transporter so that the pins are retained individually in spaced relationship by their respective movement-confining portions of the pin transporter;

moving the pin transporter toward a pin inserter after the webs have been severed from the intermediate portions of the terminal pins, to position the intermediate portion of each terminal pin in the pin transporter into a movement-confining portion of the pin inserter;

withdrawing the pin transporter from the free insertion ends of the terminal pins so that the pins are retained individually in the pin inserter in spaced relationship by the movement-confining portions of the pin inserter; and

causing relative movement between the pin inserter and a support structure to insert the free insertion end of each terminal pin retained in the pin inserter into one of the apertures of the support structure.

5. Apparatus for assembling terminal pins with a support structure where each pin is formed with a free insertion end to be inserted into one of a plurality of apertures in the support structure, and a free connector end for ultimate assembly with a connector, and where the pins are held in a strip by webs formed integrally with and between intermediate portions of adjacent pins, which comprises:

first clamping means for releasably clamping the free insertion ends of a plurality of the terminal pins

means for severing the webs between the intermediate portions of the terminal pins being clamped by the first clamping means;

second clamping means for releasably clamping the interme-

diate portions of the terminal pins after the webs have been severed from the intermediate portions of the terminal pins by the web severing means;

means, including the first clamping means, for transporting the clamped terminal pins from the web severing means to the second clamping means;

means for causing the first clamping means to release the free insertion ends of the terminal pins after the intermediate portions of the pins have been clamped by the second clamping means; and

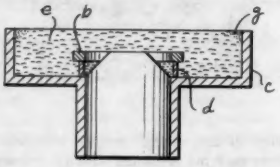
means for causing relative movement between the support structure and the second clamping means to insert the free insertion ends of the pins into respective ones of the apertures in the support structure.

4,365,399

MANUFACTURE OF LIGHT WEIGHT PISTONS

Durald Mahrus, Sao Paulo, Brazil, assignor to Metal Leve S.A. Industria e Comercio, Brazil

Continuation-in-part of Ser. No. 56,190, Jul. 10, 1979, abandoned. This application Sep. 15, 1980, Ser. No. 187,344
Claims priority, application Brazil, Jul. 12, 1978, 17804521
Int. Cl.³ B23P *15/10*; B22D *13/00*
U.S. Cl. 29—156.5 R **9 Claims**



1. A method of manufacturing light weight composite internal-combustion engine pistons which comprises forging a piston body of aluminum alloy with a configuration adapted for a ring insert, positioning a ring insert of an iron alloy in juxtation to and with a clearance between it and said configuration to form an assembly, inserting said assembly in a confining mold, heating the surface of said assembly to temperatures below the melting point of said forging, rotating said mold and while said mold is being rotated directing a flow of a molten aluminum alloy at an oxide-removing angle into the space formed by the clearance between the configuration in said piston body forging and said insert to fusion weld said insert to said piston body at said configuration, said rotation of said mold while said flow of molten aluminum alloy is being directed therein at said oxide removing angle causing oxides to dislodge from the surfaces of the piston body and insert ring and flow to the upper periphery of the mold where the same can be removed, thus effecting integral bonding of the piston body to the ring insert.

4,365,400

APPARATUS FOR INSTALLING SLEEVES ON SUBSTRATES

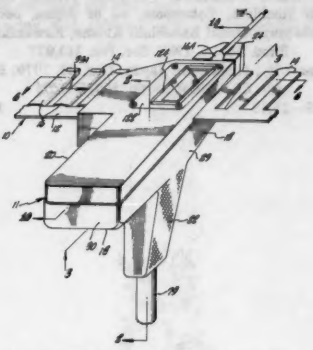
William D. Carlomagno, Redwood City, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Filed Jan. 23, 1980, Ser. No. 114,617
Int. Cl.³ B23P *19/00*
U.S. Cl. 29—235 **38 Claims**

1. Apparatus for installing sleeves on elongated substrates, each sleeve being slideably arranged on one of a plurality of fingers extending substantially perpendicular from a carrier belt, the apparatus comprising:

(a) a base including a belt path for receiving the carrier belt and a finger guideway for receiving a finger of the carrier belt with a sleeve arranged thereon, the finger guideway being substantially perpendicular to the belt path; and

(b) stripping means mounted to slide reciprocatingly along the base for slidably forcing a sleeve that is arranged on a finger within the finger guideway onto a substrate, the stripping means having a stroke and comprising tines spaced apart a distance at least equal to the thickness of



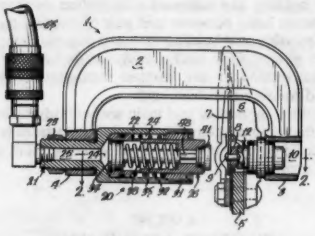
the carrier belt, and means for limiting the stroke of the stripping means to a sufficiently short length that the carrier belt can be maintained between the tines as the stripping means reciprocatingly slides along the base.

4,365,401

RIVET REMOVAL AND FASTENING TOOL

Robert S. Ogren, Owatonna, Minn., assignor to Owatonna Tool Company, Owatonna, Minn.

Filed Oct. 20, 1980, Ser. No. 199,197
Int. Cl.³ B23P *11/00*
U.S. Cl. 29—243.53 **11 Claims**



1. A rivet tool comprising:

a frame having a first support opposed by a second support;

an anvil mounted in said first support for supporting the workpiece;

a hydraulic cylinder mounted in said second support and having a closed end and an open end directed toward the workpiece;

a sleeve having a head end sealingly and slidably located within said cylinder with another end for clamping said workpiece extensible beyond said open end of said cylinder;

a piston located within said sleeve for relative movement therewith and having a rivet engaging member thereon;

means for preventing the movement of said piston relative to said sleeve until said sleeve has clamped the workpiece; and

a hydraulic conduit connected to the closed end of said cylinder whereby fluid under pressure enters the closed end of said cylinder through said conduit to cause the sleeve and piston to move as a unit due to said preventing means until said sleeve clamps the workpiece whereupon

the piston moves relative to the sleeve to cause the rivet engaging member to engage the rivet.

4,365,402

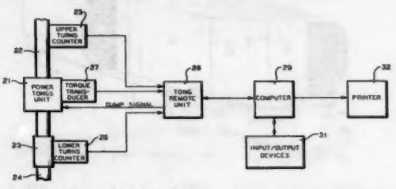
METHOD FOR COUNTING TURNS WHEN MAKING THREADED JOINTS

Russell L. McCombs, San Antonio, and James V. Motsinger, Austin, both of Tex., assignors to Baker International Corporation, Orange, Calif.

Division of Ser. No. 941,894, Sep. 12, 1978. This application Jul. 19, 1979, Ser. No. 59,100

Int. Cl.³ B23Q *5/00*

U.S. Cl. 29—407 **3 Claims**



1. A method for making threaded joints from a pair of cooperatively threaded members within a desired range of predetermined applied torque and turns values comprising the following steps: (a) engaging the cooperating threads and rotating one of the members with respect to the other of the members by applying torque thereto; (b) monitoring the actual torque applied to said one member; (c) accumulating a count total of the turns made by said one member after a predetermined reference torque value has been reached by adding each turn as it is made to said count total when said actual torque is greater than said reference torque and by subtracting each turn as it is made when said actual torque is less than said reference torque; and (d) indicating when said accumulated count total and said actual torque values are within said desired range of predetermined applied torque and turns values.

4,365,403

METHOD OF AND APPARATUS FOR INTERENGAGING A PAIR OF SLIDE FASTENER STRINGERS

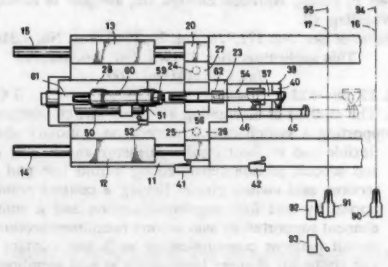
Yasumasa Ooura, Kurobe, Japan, assignor to Yoshida Kogyo K.K., Japan

Filed Dec. 1, 1980, Ser. No. 211,805

Claims priority, application Japan, Dec. 18, 1979, 54-164260

Int. Cl.³ B23P *19/04*

U.S. Cl. 29—408 **10 Claims**



1. A method of interengaging a pair of slide fastener stringers including a pair of rows of coupling elements, respectively, comprising the steps of:

(a) intermittently feeding the slide fastener stringers respectively along a pair of longitudinal paths in parallel planes with the rows of coupling elements being directed in one direction;

(b) displacing the stringers sideways off said paths toward each other into a generally Y-shaped coupling channel while the stringers are at rest; and

(c) turning the rows of coupling elements into confronting relation to each other in said coupling channel, whereby the rows of coupling element can be interengaged when they move through said coupling channel.

4,365,404

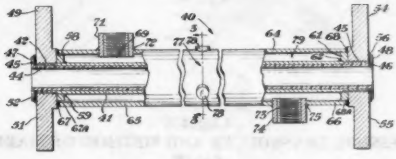
MAKING JACKETED LINED PIPE

German O. Castro, and Frederick C. Sovia, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 31,795, Apr. 20, 1979. This application Nov. 19, 1980, Ser. No. 208,208

Int. Cl.³ B21D *39/00*; B23P *19/04*

U.S. Cl. 29—455 R **3 Claims**



1. A method for the preparation of a lined pipe, the steps of the method comprising providing a first metallic conduit having a first end and a second end, disposing on the first end and the second end of the conduit a metallic spacing ring, welding the spacing ring in liquid tight engagement to the conduit, providing a first flange, disposing the first flange on the first end of the conduit, providing a generally cylindrical jacket, positioning the jacket over the spacing rings in abutting relationship to the first flange; providing a second flange on the second end of the pipe, welding in liquid tight engagement the jacket to the first and second flanges and metallic spacing rings, subsequently lining the pipe with a plastic liner.

4,365,405

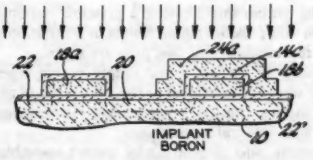
METHOD OF LATE PROGRAMMING READ ONLY MEMORY DEVICES

John E. Dickman, Russiaville, and William B. Donley, Kokomo, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed May 28, 1981, Ser. No. 268,089

Int. Cl.³ H01L *21/22*

U.S. Cl. 29—571 **5 Claims**



1. A method of making a high speed and high density read-only memory, and encoding it in later steps of the method comprising:

forming on a semiconductor surface, an operative IGFET array having an overlying gate electrode pattern formed by a first level of polycrystalline silicon;

covering channels of predetermined IGFETs in said array with a second level of polycrystalline silicon and leaving the balance of array IGFET channels uncovered;

significantly selectively altering threshold voltage of said balance of IGFET channels by blanket ion implantation of said array at an energy insufficient to penetrate both levels of said polycrystalline silicon, effective to render said channels unresponsive at an intended gate electrode operating voltage;

covering said array with an insulating coating and etching array contact windows in it while maintaining coating thickness over said channels; and

forming an array output conductor pattern on said insulating coating, whereby said pattern crosses gate electrodes over said channels without incurring significant parasitic interaction therewith.

4,365,406

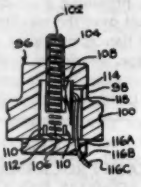
PRESSURE TRANSDUCER AND METHOD OF MAKING SAME

Daniel L. Neill, Pelleville, and Leonard T. Tribe, Ann Arbor, both of Mich., assignors to Kelsey Hayes Company, Romulus, Mich.

Division of Ser. No. 96,861, Nov. 23, 1979, Pat. No. 4,279,162. This application Mar. 30, 1981, Ser. No. 249,281

Int. Cl.³ G01L *27/00*; G01R *3/00*

U.S. Cl. 29—593 **1 Claim**



1. A method of producing an electro-mechanical pressure transducer whereby a desired relationship between an input fluidic pressure signal and an electrical output signal is achieved through positioning of elements during assembly thereof, comprising the steps of:

(a) providing a housing;

(b) affixing within said housing a pressure responsive means wherein said pressure signal results in translation of a piston means representative of said pressure signal;

(c) providing an electric signal output means wherefrom an electric signal proportional to the movement of an actuation means therein emitted, wherein said electric signal output means is an integral assemblage;

(d) assembling said electric signal output assemblage within said housing whereby said piston element and said actuation means are engaged such that translation of said piston element causes displacement of said actuation means;

(e) applying a known input pressure signal to said pressure responsive means;

(f) monitoring said electrical output signal;

(g) permanently positioning said integral electric signal output assemblage within said housing such that the emitted electrical signal bears a desired relationship with said input pressure signal.

4,365,407

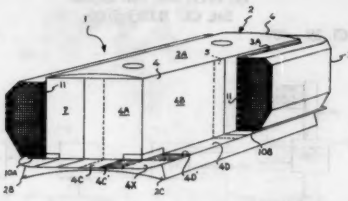
METHOD OF MAKING AN INSULATED POLE AND COIL ASSEMBLY

Joseph J. Zdaniewski; William B. Penn, and Roy L. Balke, all of Erie, Pa., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 41,170, May 21, 1979, Pat. No. 4,293,784. This application Feb. 2, 1981, Ser. No. 230,471

Int. Cl.³ H02K *15/10*

U.S. Cl. 29—598 **4 Claims**



1. A method of making an insulated pole and coil assembly comprising the steps of:

(a) providing a pole having a base portion with tip portions protruding from generally opposite sides thereof,

(b) forming sheets of readily bendable insulating material with back parts and lip parts that are adapted, respectively, to cover the corners and the sides of the pole base and surfaces of the tip portions, said forming including the steps of b-1, b-2 and b-3 as set forth below,

(b-1) cutting sheets of calendered insulating material into predetermined pole-covering patterns,

(b-2) bending edges of the calendered sheets to form them into L-shaped back parts and first and second sections of a lip part that define a gap at the corner thereof,

(b-3) adhering a preformed sheet of insulating felt to the ends of the first and second sections of each lip part adjacent to said corner gap and to the back part adjacent said corner, thereby to cover the gap and form said sheet of insulating felt as a third section of each lip part,

(c) mounting the sheets of insulating material on the pole to cover each corner thereof and extend beyond said corners, respectively, to cover the sides of the pole base portion and one surface of the tip portions,

(d) mounting a coil around the pole over the sheets of insulating material to press them against the tip portions of the pole.

4,365,408

METHOD OF MAKING MEMBRANE CONTACT SWITCH

Albert F. Ditzig, Hoffman Estates, Ill., assignor to Re-al, Inc., Wheeling, Ill.

Division of Ser. No. 171,726, Jul. 24, 1980, Pat. No. 4,314,117. This application Jun. 1, 1981, Ser. No. 268,790

Int. Cl.³ H01H *11/00*

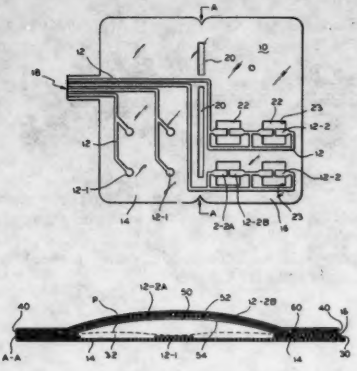
U.S. Cl. 29—622 **7 Claims**

1. The method of assembling a contact switch comprising:

supporting a switch circuit pattern on a unitary sheet of flexible and resilient insulation membrane having a first and second section separated by a fold line and a tail section, said switch circuit having a contact point supported by said first membrane section and a contactor element supported by said second membrane section, said circuit patterns communicating with said contact point and contactor element terminating at said membrane tail section;

folding said first and second membrane sections upon themselves along said fold line so that said contactor element supported by said second membrane section is positioned above and in registry with said contact point supported by said first membrane section; and

positioning a resilient dome having upper and lower electrically conductive surfaces which are in communication with each other between said contact point and said contactor element so that the contactor element will be maintained in electrical contact with the upper surface of said dome and, in its nonflexed, rest position, said dome will not electrically contact the circuit pattern supported by said first membrane section.



4,365,409

METHOD AND APPARATUS FOR FILLING SODIUM INTO SODIUM SULPHUR CELLS

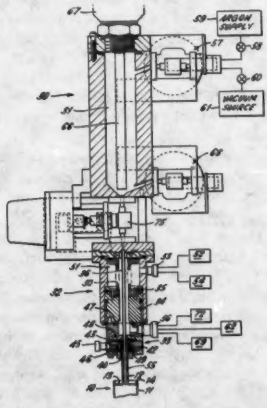
David J. Riley, Chester, and Gerald McGreavy, Bolton, both of England, assignors to Chloride Silent Power Limited, London, England

Filed Oct. 2, 1980, Ser. No. 193,058

Claims priority, application United Kingdom, Oct. 15, 1979, 7935712

Int. Cl.³ H01M *2/36*

U.S. Cl. 29—623.2 **16 Claims**



1. A method of filling sodium into the sodium reservoir of a sodium sulphur cell comprising the steps of closing the sodium reservoir except for an open-ended metal filler tube sealed into the reservoir and extending outwardly therefrom, heating the cell to a temperature such that sodium will remain liquid, temporarily sealing an outlet of a filling machine round the outer surface of the filler tube with the cell arranged so that the filler tube extends upwardly from the reservoir, inserting a feed tube from said outlet into the filler tube to extend downwardly therein, evacuating the reservoir of air through the annular region between the feed tube and the filler tube, metering a predetermined quantity of liquid sodium through said outlet and said feed tube into the sodium reservoir and then pinching and sealing the filler tube.

4,365,410

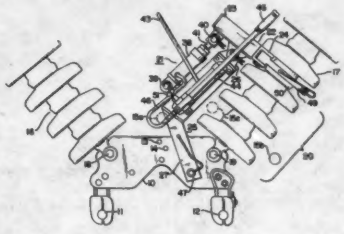
CONDUCTOR TRANSFER DEVICE

Herbert J. Houston, and Edward S. Dinsmore, both of Oakville, Canada, assignors to Slater Steel Industries Limited, Hamilton, Canada

Filed Mar. 2, 1981, Ser. No. 239,527

Int. Cl.³ H01R *43/00*

U.S. Cl. 29—762 **5 Claims**



1. A device enabling movement of a conductor from one side to the other of a string of insulators coupled between a tower and a yoke plate, comprising:

an upper frame having clamping means at its upper end for engaging an intermediate portion of said string;

a lower frame having securing means at its lower end for engaging said yoke plate;

means interconnecting the lower end of said upper frame and the upper end of said lower frame for effecting approximately longitudinal movement of the upper end of the upper frame and the lower end of the lower frame relative to each other to permit uncoupling of a selected portion of said string to permit movement of said conductor past said selected portion from one side of said string to the other and subsequent recoupling of said selected portion of said string,

wherein said clamping means and said securing means are aligned with each other longitudinally of the device to define a longitudinal axis,

the lower end of said upper frame, the upper end of said lower frame and said means for interconnecting the same being offset relative to said axis,

said clamping means comprising:

a first semi-circular jaw having a lateral extension with a first hole therein, said first jaw being pivotally mounted at its opposite end to the upper end of said upper frame,

a second semi-circular jaw shaped complementally to said first jaw with a lateral extension having a second hole therein aligned with said first hole and pivotally mounted at its opposite end on said upper end of said upper frame, a bolt adapted for movement into and out of said aligned holes, and a nut threaded on said bolt for engagement with said lateral extension of said second jaw,

said means for effecting longitudinal movement of said frames relative to each other comprising means for pivotally mounting the upper end of the lower frame to a part of the upper frame intermediate the ends thereof, and extensible means coupled between the lower frame and the lower end of the upper frame for causing relative rotation of said frames, so that said lower end of said upper frame moves away from said lower frame, and said

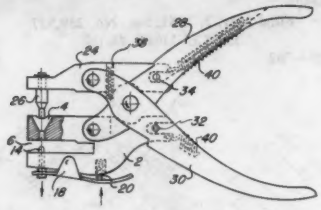
upper end of said upper frame moves toward said lower frame.

4,365,411

METHOD AND MEANS FOR INSERTION OF INSERTS INTO A HOLE OF A PREDRILLED BOARD

Edward M. Muldoon, Jr., Dana Point, Calif., assignor to Bivar, Inc., Santa Ana, Calif.

Filed Aug. 28, 1980, Ser. No. 182,138
Int. Cl.³ H05K *3/00*; B23P *19/00*
U.S. Cl. 29—845 **4 Claims**



1. A method for inserting an insert into a hole on a predrilled workpiece comprising the steps of:

inserting a retractable centering pin from one side of the workpiece into the hole for centering the hole axially;

aligning the insert axially to the centering pin from the opposite side of the workpiece;

inserting the insert axially into the hole with a force substantially axial to the hole; and

retracting the centering pin in response to the insertion of the insert.

2. An apparatus for inserting an insert into a hole of a predrilled workpiece, comprising:

first and second members mounted for relative movement with respect to each other;

first means disposed on the first member for aligning the hole and the insert to permit insertion of the insert into the hole from one side of the workpiece;

second means disposed on the second member to apply an axial force to the insert for insertion into the hole;

third means retractably mounted on the opposite side of the workpiece and disposed to be positioned within the hole for centering the hole in axial alignment with the insert; and

means coupled to the first and second members to impart relative movement thereto in a direction toward each other for inserting the insert within the hole and for retracting the third means from the hole in response to insertion therein of the insert.

4,365,412

METHOD OF MAKING AN ELECTRICAL CONNECTOR ASSEMBLY

Edward K. Marsh, Sidney, N.Y., assignor to The Bendix Corporation, Southfield, Mich.

Division of Ser. No. 82,439, Oct. 9, 1979, Pat. No. 4,270,825.
This application Oct. 3, 1980, Ser. No. 193,671
Int. Cl.³ H01R *43/04*
U.S. Cl. 29—863 **3 Claims**

1. A method of making a releasable electrical connector assembly, the steps of the method comprising:

positioning an elongated electrical conductor having an axial passage extending completely therethrough,

sliding an elongated body over the conductor, the body having an axial passage extending completely therethrough,

inserting a plurality of straight electrical conducting wires in one end of said conductor, said inserting being such that each wire has its forward end extending from the conductor for mating,

securing the conducting wires, the conductor and the elongated body together to thereby form an electrical contact,

inserting an exposed conductive end portion of an electrically conducting cable in the opposite end of the elongated electrical conductor so as to engage the rearward ends of the straight wires and be in electrical circuit relationship, and

securing the electrically conducting cable and the elongated electrical conductor together

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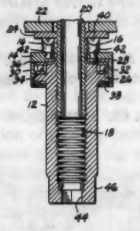
4,365,413

FAUCET STEM NUT SPLITTER

Thomas R. Quick, 2640 SW. 61, Oklahoma City, Okla. 73159

Filed Dec. 22, 1980, Ser. No. 219,029
Int. Cl.³ B26B *7/00*
U.S. Cl. 30—272 R **2 Claims**



1. A nut splitting tool for a faucet nut surrounding an intermediate portion of a vertically disposed faucet stem adjacent a sink flange, comprising:

an elongated sleeve threadedly surrounding said faucet stem below said faucet nut and having an annular outstanding flange adjacent one end portion forming a bearing surface facing said

faucet nut;

a centrally bored pressure plate coaxially surrounding said faucet stem between said sleeve and said faucet nut and forming a bearing surface facing said annular flange;

an annular wall depending from said pressure plate adjacent the periphery of and projecting downwardly beyond said flange;

keeper means for maintaining said pressure plate on said sleeve;

a chisel-like cutter secured to said pressure plate opposite its bearing surface and having a radially disposed sharpened cutting edge facing said faucet nut;

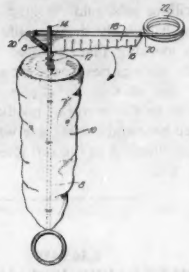
friction reducing means interposed between said annular flange and said pressure plate for angular rotation of said sleeve relative to said faucet stem; and,

wrench engaging means formed on the end portion of said sleeve opposite the annular flange.

4,365,414
VEGETABLE SLICER

Joseph Kovacs, 1977 Jarry St., East, Montreal, Quebec, Canada (H2E 1B7)

Filed Feb. 17, 1981, Ser. No. 235,155
Claims priority, application Canada, May 1, 1980, 351087
Int. Cl.³ A47J 17/02
U.S. Cl. 30—310 3 Claims



1. A device for cutting vegetables into connected slices of helical configuration comprising

cutting means comprising a bent wire frame with an inner end bent to form a feed screw and an outer end bent into a looped handle, and an elongate cutting blade having a cutting edge carried by the frame between the ends thereof with the blade extending outwardly from the feed screw in direction normal to the axis thereof,

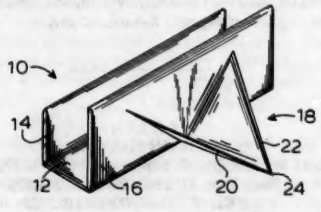
the feed screw having an axial opening to receive a skewer upon which a vegetable to be cut is mounted,

the feed screw upon rotation of the cutting means about the skewer carrying a vegetable, advancing into the vegetable to move the slicing means along the skewer and the cutting edge through the vegetable in a helical cutting path.

4,365,415
MELON CUTTING TOOL

Rene Pustoch, 24-49 23rd St., Astoria, N.Y. 11102

Filed Sep. 8, 1981, Ser. No. 299,955
Int. Cl.³ B26B 3/00
U.S. Cl. 30—314 3 Claims



1. A melon cutting tool, comprising:

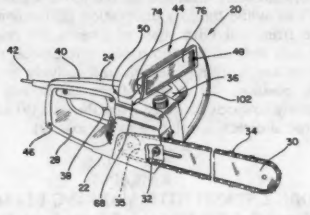
an elongated handle portion having a generally U-shaped cross section and being comprised of a base portion and two upright sidewalls joined to opposite ends of said base wall, which handle portion is configured and dimensioned for gripping by one's fingers; and

a blade portion secured to an outer side of one of said sidewalls, centrally thereto, and disposed normally to said handle portion, said blade portion tapering generally to a point and having a generally V-shaped cross section.

4,365,416
CHAIN SAW HANDLE, GUARD AND HOUSING INTERCONNECT

Douglas G. Overbury, Brockville, Canada, assignor to Black & Decker Inc., Newark, Del.

Filed Nov. 18, 1980, Ser. No. 251,720
Int. Cl.³ B23D 57/02
U.S. Cl. 30—382 14 Claims



1. A housing for a chain saw in which a motive means is mounted to power a saw chain, the housing comprising:

(a) a frame,

(b) a handle projecting from the frame at one end,

(c) a handguard projecting from the frame at one end and having a portion thereof in spaced relationship to the handle,

(d) the handle having an other end thereof slabbed,

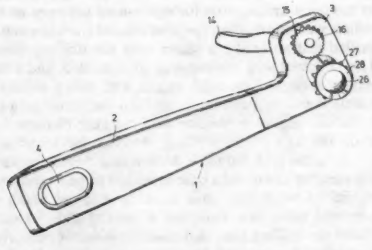
(e) the handguard having an other end thereof slabbed to interlock with the slabbed end of the handle, and

(f) fastener means interlocking the slabbed ends of the handle and handguard to the frame to form a rigid connection therewith.

4,365,417
TIN OPENER

Evert Rosendahl, Adolf Fredriksgatan 15A, S-217 74 Malmo, Sweden

PCT No. PCT/SE78/00088, § 371 Date Aug. 1, 1980, § 102(e) Date Jul. 31, 1980, PCT Pub. No. WO80/01159, PCT Pub. Date Jun. 12, 1980
PCT Filed Dec. 1, 1978, Ser. No. 199,723
Int. Cl.³ B67B 7/34
U.S. Cl. 30—422 2 Claims



1. A tin opener with a body (2, 3), a drive shaft (8) mounted in the body in such a way as to be capable of rotation about an axis (9), the said drive shaft having a feed roll (16) for driving engagement with the tin and further supporting a pinion (10), a tooth segment device so mounted in the body as to be capable of rotation about a second axis (20) between a position of rest and a working position, the said tooth segment device having a row of teeth (21) extending along an arc and arranged to engage the pinion (10) with a view to rotating the tooth segment device between the position of rest and the working position, a cutter roll (28) so mounted in a rotatable manner on

a spindle embedded in the tooth segment device that the axis of rotation (29) of the cutter roll is inclined in relation to the second axis and the cutter roll is, in the working position, in cutting engagement with a tin abutting a feed roll but is in the position of rest at a distance from the tin, characterised in that the spindle (25) carries in as such known manner a gear-wheel (27) which in the working position engages a driving gear-wheel (15) on the drive shaft (8) but does not engage the driving gear-wheel in the position of rest, and in that the spindle (25) is eccentrically arranged on the tooth segment device in such a way while the axis or rotation (29) extends at such a distance from and with such an orientation relative to the second axis that as the tooth segment device turns, in the vicinity of the working position, respectively to or from the working position, the centre of the cutter roll (28) moves respectively towards or away from the axis (9) in a predominantly radial direction relative to the axis (9).

4,365,418

DRILL STAND WITH MARKING ELEMENT

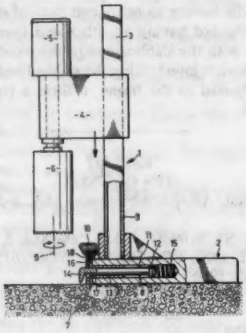
Franz Hoyss, Bad-Tölz-Oberf., and Franz Popp, Pucheim, both of Fed. Rep. of Germany, assignors to Hilti Aktiengesellschaft, Schaan, Liechtenstein

Filed Dec. 12, 1980, Ser. No. 215,912

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1979, 2950816

Int. Cl.³ B27G *23/00*; B23B *39/00*

U.S. Cl. 33—185 R **2 Claims**



1. Drill stand comprising means for supporting a drilling member having a drilling axis for movement between an inactive position with the drilling member spaced from the material to be drilled and an active position with the drilling member moved into contact with the material to be drilled, and a marking element mounted on said means and being selectively displaceable between a retracted position and a marking position and in said marking position said marking element being located on the axis of the drilling member for locating the drilling axis on the material to be drilled, said means supporting a drilling member comprise a base arranged to be supported on the material to be drilled, said marking element being supported in said base, said base has a bore therein extending normally of the drilling axis, said marking element comprises a pointer slidably displaceable in said bore, a spring located in said bore inwardly of said pointer for biasing said pointer into the marking position, said pointer including a shaft-like portion having a shoulder adjacent one end thereof, and a slide member positioned in said base and spring biased into contact with said shoulder on said pointer for securing said pointer in the retracted position.

2. Drill stand comprising means for supporting a drilling member having a drilling axis for movement between an inactive position with the drilling member spaced from the material to be drilled and an active position with the drilling member moved into contact with the material to be drilled, and a marking element mounted on said means and being selectively displaceable between a retracted position and a marking position and in said marking position said marking element being located on the axis of the drilling member for locating the drilling axis on the material to be drilled, said means for supporting a drilling member comprise a base arranged to be supported on the material to be drilled, said marking element being supported in said base, a pair of laterally spaced guide attachments secured to said base and extending perpendicularly of the drilling axis, said marking element comprising a pair of rods each slidably displaceable in one of said guide attachments, a marking plate secured to and extending between said rods, springs positioned on said rods between said marking plate and said guide attachments for biasing said marking element to the marking position, and a stop spring mounted on said base and engageable with said rods for securing said marking element in the retracted position.

4,365,419

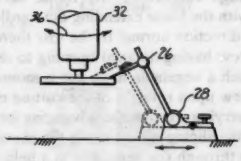
ALIGNMENT DEVICE FOR MACHINE HEAD

Luis Ingels, 242 S. Irwindale, Azusa, Calif. 91702

Continuation-in-part of Ser. No. 47,369, Jun. 11, 1979, abandoned. This application Jan. 14, 1981, Ser. No. 225,017

Int. Cl.³ G01B *5/24*

U.S. Cl. 33—185 R **31 Claims**



1. A device for aligning the cutting head of a machine comprising:

a disk having a flat surface;

means including a hub attached to said disk, said hub having an axis accurately perpendicular to said flat surface, for attaching said disk to said machine head; and indicia means around the periphery of said flat surface for use in determining the location of an axis on said disk perpendicularly accurate to said machine head axis, whereby said machine head may be accurately aligned with the machine table by traversing said last-named axis.

4,365,420

CHAIN GAUGE

William C. Walden, Box F, Sandstone, Minn. 55072

Filed Mar. 27, 1981, Ser. No. 248,420

Int. Cl.³ B23D *63/00*; G01B *5/20*

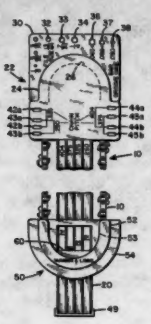
U.S. Cl. 33—202 **14 Claims**

1. An apparatus for measuring link characteristics of chains including number of chain links as a function of pitch of chain links, comprising

(a) a semicircular holder having a recess therein for accepting a chain, said holder having a plurality of pairs of sight holes, each such pair of sight holes positioned along said recess to permit viewing of said chain links;

(b) an elongated scale extending from said semicircular holder, said scale having graduations thereon indicative of the number of links on a chain;

(c) a semicircular shoe slidably mounted on said elongated scale, said shoe having a recess therein for accepting a



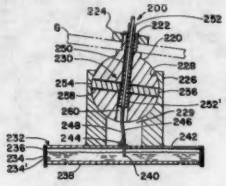
chain and having a cursor thereon for reading graduations on said scale.

4,365,421

MOTION AND ORIENTATION SENSOR

Barney L. Byrum, 7706 Tomlinson Ave., Bethesda, Md. 20034

Filed Aug. 24, 1978, Ser. No. 936,387
Int. Cl.³ G01C 9/06
U.S. Cl. 33—366 **22 Claims**



1. A device for detecting changes in inclination of an object comprising:

a closed container having an interior which is at least partly defined by side walls which are electrically non-conductive and diametrically separated by a distance 2R, said container interior having a height H and a top wall and being at least partially filled with electrically conductive fluid having a top surface which subsists in a substantially uninterrupted plane between said side walls and which is spaced a distance h from said top wall when said height H is vertically oriented, wherein the ratio 2R/H is much greater than one;

mounting means suspending said container in fixed orientation in relation to said object;

electrical circuit means responsive to a predetermined degree of disturbance of said fluid in said container for providing an electrical signal representing an inclination change in said object, said electrical circuit means including an electrical switch comprising:

a first electrode positioned in said container to be continuously immersed in said conductive fluid when said height H is vertically oriented and over a predetermined range of inclinations of said height H;

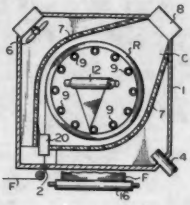
a second electrode positioned in said container above said top surface of fluid a distance h' no greater than h when said height H is vertical but immersed in said fluid when inclination change in said height H causes said predetermined degree of disturbance of said fluid.

4,365,422

METHOD AND APPARATUS FOR CONTINUAL TREATMENT OF TEXTILE SHEET MATERIAL BY APPLICATION OF MICROWAVES

Bunshiro Kawaguchi, Kyoto, Japan, assignor to The Ichikin, Ltd., Japan

Filed Apr. 16, 1981, Ser. No. 254,928
Int. Cl.³ F26B 23/08
U.S. Cl. 34—1 **7 Claims**



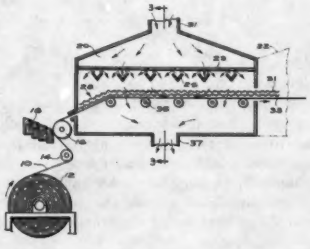
1. A method for continuous treatment of textile sheet material by application of microwaves comprising the steps of, continuously introducing said textile sheet material into a confining chamber, continuously winding said textile sheet material in the form of a cylindrical hollow roll comprising a plurality of contiguous layers of textile sheet material about a plurality of substantially parallel guide rollers arranged within said chamber at predetermined intervals along the circumference of an imaginary circle, supplying steam into said chamber and within said hollow roll, continuously delivering the innermost layer of said textile sheet material from said cylindrical hollow roll towards the outside of said chamber as said textile sheet material is being continuously wound about the outermost layer of said cylindrical hollow roll, and emanating microwaves into said chamber during passage of said textile sheet material therethrough.

4,365,423

METHOD AND APPARATUS FOR DRYING COATED SHEET MATERIAL

Thomas C. Arter, Rochester, and Eugene H. Barbee, East Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 27, 1981, Ser. No. 247,976
Int. Cl.³ F26B 3/04, 13/02
U.S. Cl. 34—23 **28 Claims**



1. In a method for drying a sheet material which has been coated on a surface thereof with at least one layer of a mottle-prone coating composition containing a liquid medium that is capable of being evaporated from said coating composition by contact with a gaseous drying medium, said method comprising the steps of advancing said coated sheet material along a predetermined path through a drying zone and uniformly directing a gaseous drying medium onto the coated surface of

said sheet material so as to bring about evaporation of said liquid medium with resulting formation of spent gaseous drying medium which flows away from said path for discharge from said drying zone; the improvement which comprises advancing said sheet material with said coated surface in opposed closely spaced relationship with a foraminous shield which is permeable to said gaseous drying medium, so as to promote flow of said spent gaseous drying medium adjacent to the surface of said shield which is remote from said coated surface and to form a quiescent region between said shield and said coated surface which is rich in the vapor of said liquid medium and in which flow of said spent gaseous drying medium is suppressed and uniform heat transfer conditions are promoted, whereby formation of mottle in said coating is reduced.

4,365,424

METHOD FOR SURFACE TREATMENT OF AN ENDLESS TEXTILE STRUCTURE

Werner Hoersch, Im Brunch 7, 4060 Viersen 11 - Boisheim, Fed. Rep. of Germany

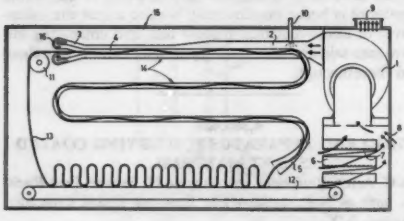
Division of Ser. No. 127,884, Mar. 6, 1980, Pat. No. 4,286,395. This application Apr. 24, 1981, Ser. No. 257,214

Claims priority, application Fed. Rep. of Germany, Mar. 7, 1979, 2908888

The portion of the term of this patent subsequent to Sep. 1, 1998, has been disclaimed.

Int. Cl.³ F26B *3/04*

U.S. Cl. 34—23 **9 Claims**



1. A process for surface treating an endless textile structure comprising the steps of

placing an endless textile structure in a substantially closed container with a portion of the textile positioned within an elongated intensive treatment zone which is located in the container but which is substantially isolated from the container interior;

directing a jet of treatment air from a blower zone into the treatment zone at an inlet zone thereof, through a nozzle, away from the inlet zone and against the portion of the textile to create a current of air moving in a flow direction longitudinally through the treatment zone, thereby causing the textile to spread out and flutter in its spread-out form and to be conveyed continuously through the treatment zone;

continuously receiving the textile through an outlet zone laterally spaced from the inlet zone and onto a conveyor disposed below the treatment zone as the textile emerges from the treatment zone;

continuously conveying the textile on the conveyor to a location substantially below the inlet zone;

continuously removing the textile from the conveyor; and

after removal of the textile from the conveyor, delivering the textile to the inlet zone for repetitive treatment.

4,365,425

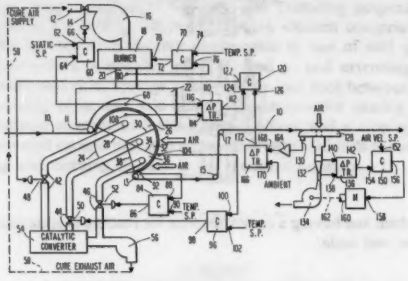
CONTROLLED CURING OF AIR-PERMEABLE BONDED WEBS

Joel P. Gotchel, Delaware County, Pa., assignor to Scott Paper Company, Philadelphia, Pa.

Filed Jun. 9, 1981, Ser. No. 272,057

Int. Cl.³ F26B *21/12*

U.S. Cl. 34—54 **4 Claims**



1. Apparatus for curing a bonded, air-permeable web comprising:

(a) drying means for controllably passing heated air at a predetermined temperature through the web for a predetermined time;

(b) means for generating a first signal representing the pressure drop, at a predetermined velocity, across the web outside of the drying means;

(c) means for generating a second signal representing the pressure drop across the web inside the drying means; and

(d) means, responsive to the first and second signals, for controlling the passing of the heated air through the web so as to maintain the pressure drop across the web inside the drying means equal to the pressure drop as measured by the first signal generating means.

4,365,426

HAIR DRYER

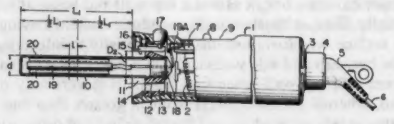
Kunio Suzuki, and Minoru Takahashi, both of Kyoto, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 8, 1981, Ser. No. 223,290

Claims priority, application Japan, Jan. 11, 1980, 55/1292

Int. Cl.³ F26B *11/00*; A45D *2/36*

U.S. Cl. 34—101 **8 Claims**



1. In a hair dryer having an elongated cylindrical casing, an elongated hair setting member around which the hair is to be wound, said hair setting member being detachably secured to said casing, heating means and blowing means disposed in said casing, an intake port means provided in said casing and a discharge port means for said blowing means provided at a forward end portion of said casing, an improvement comprising an elongated heating bar disposed substantially centrally of said discharge port means and extending forwardly beyond said casing, a heat generating body means associated with said heating bar, said hair setting member being formed of a heat conducting material and including an insertion hole extending in a longitudinal direction of said hair setting member and adapted to receive said heating bar such that contact is established between an outer peripheral surface of said heating bar

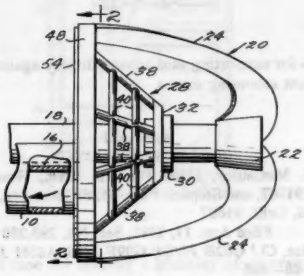
and an inner peripheral surface of said insertion hole formed in said hair setting member, whereby heat is transferred from said heat generating body means to said hair setting member via said heating bar and a discharge from the blowing means is directed around the hair setting member.

4,365,427

SUCTION DREDGE CUTTER HEAD

Marion R. Chapman, Jr., 1102 D. Holik Dr., College Station, Tex. 77840

Filed Jul. 21, 1981, Ser. No. 285,527
Int. Cl.³ E02F *3/92*
U.S. Cl. 37—57 **6 Claims**



1. For use with a suction dredge having a suction pipe, the combination comprising:

a driven cutter head of open-work construction which encloses and is rotatable adjacent the mouth of the pipe about an axis generally parallel to the axis of the pipe, said head comprising a plurality of digging arms which spiral divergently rearward from hub means forward of the mouth and recede rearward of the direction of their rotation; and

crusher means of grid-like open-work construction within said head and cooperating with said arms to crush, on relative rotation between said head and crusher means, large objects dug by and passing through said head in order to minimize damage and clogging of suction and discharge lines and the dredge pump of the dredge, said crusher means being of generally frusto-conical configuration and generally-coaxial with said head, and provided with interconnecting generally circumferential and generally longitudinal bars, whereby said arms sweep large objects into the clearance between said arms and bars so as to exert a crushing action which breaks the objects into smaller pieces which can pass through the openings in said crusher means and into the mouth of the pipe.

4,365,428

BUCKET MOUNTED FOOTING TOOL

John F. Shumaker, Mt. Pleasant, Iowa, assignor to J. I. Case Company, Racine, Wis.

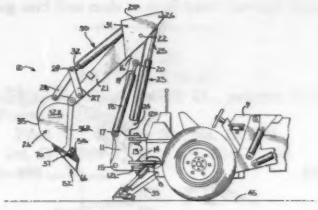
Filed Nov. 24, 1980, Ser. No. 209,540
Int. Cl.³ E02F *5/02*
U.S. Cl. 37—103 **4 Claims**

1. Digging apparatus suitable for use with implements using a pivoting arm to operate a bucket in digging a trench in soil, comprising:

(a) a bucket adapted to be connected to said arm and defining two side walls and a backwall, one edge of which is the leading edge of said bucket,

(b) footing means, carried by said bucket, for excavating a channel at the base of the trench dug by said bucket, said footing means defining a downwardly disposed first leading edge lying in advance of the leading edge of said bucket and having a width less than the width of said bucket,

whereby said bucket when thrust forward into the soil drives said first leading edge into the soil where it breaks loose a portion of the soil beneath the leading edge of the bucket, that portion of the soil broken loose by said footing means being funneled into said bucket by the leading edge of the bucket while leaving an elongated groove along the path of the bucket, the width of said groove being less than the width of the trench formed by said bucket,



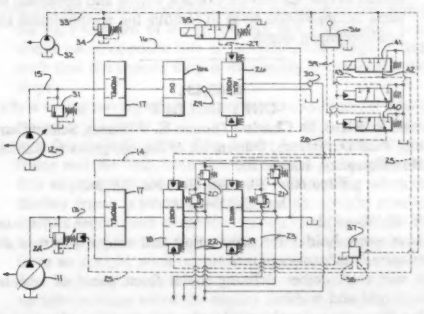
said footing means including a first plate member and a second plate member, said first plate member and said second plate member defining complementary edges, said first plate member and said second plate member being joined together along said complementary edges to define said first leading edge, said first leading edge of said footing means lying forwardly and downwardly relative to the leading edge of said bucket when the leading edge of the bucket lies along the base of said trench.

4,365,429

MAXIMUM LIFT SYSTEM FOR HYDRAULIC HOE

Frank A. Ecker, Racine; Theodore G. Jensen, Kenosha, and Norman B. Christensen, Racine, all of Wis., assignors to Bucyrus-Erie Company, South Milwaukee, Wis.

Filed Nov. 18, 1981, Ser. No. 322,404
Int. Cl.³ E02F *3/32*; F15B *13/08*
U.S. Cl. 37—103 **4 Claims**



1. In a maximum lift system for a hydraulic hoe having a hydraulic hoist cylinder and associated hoist circuit, a double-acting hydraulic wrist cylinder with an associated wrist circuit, a dual pressure relief valve in the hoist circuit that has a normal lower operating setting and can be hydraulically biased to a higher maximum setting, and actuating means to supply a bias signal to the relief valve,

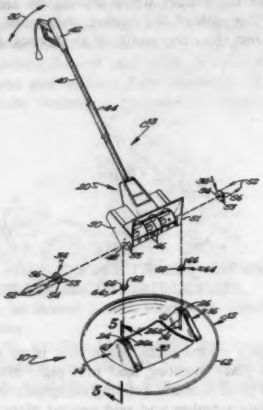
the improvement wherein: there is a lockout means in the wrist circuit that is selectively operable to block the wrist circuit and lock the wrist cylinder in whatever position it is then in; and the actuating means operates the lockout means simultaneously with supplying the bias signal.

4,365,430

SNOW REMOVAL ACCESSORY FOR SNOW THROWING DEVICES

James W. Myerly, Box 236, Ortonville, Minn. 56278

Filed Jun. 29, 1981, Ser. No. 278,490
Int. Cl.³ E01H *5/00*
U.S. Cl. 37—244 **7 Claims**



1. A snow removal accessory usable with a power-driven snow-throwing device on the upper surface of an accumulation of snow comprising:

a support frame including skid means for placement on the upper surface of the accumulation and capable of sliding movement on the upper surface while supporting the weight of the snow-throwing device, said skid means comprising a substantially circular disc having a port therethrough for downward suspension of the snow-throwing device below said disc; and

mounting means on said frame and connectable to the snow-throwing device for retaining the snow-throwing device on the frame and for suspending the snow-throwing device a predetermined distance below the level of said skid means so that the device extends within and confronts the snow accumulation so as to remove the accumulation to a predetermined depth.

4,365,431

COPY HOLDER

Gerald R. Klaus, St. Charles; Thomas E. Williams, Schaumburg, and Paul D. Nizzere, Darien, all of Ill., assignors to Bankers Box Company, Itasca, Ill.

Filed Nov. 10, 1980, Ser. No. 205,343
Int. Cl.³ B41J *11/64*
U.S. Cl. 40—352 **7 Claims**

1. A copy holder for positioning and supporting two displays simultaneously comprising:

a support member defining a flat front panel of selected height and width;

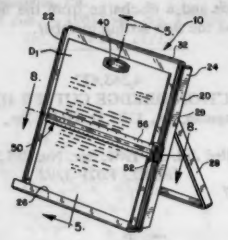
leg means to maintain said front panel in a generally upright position;

a first display positioned on said front panel of said support member;

transparent mounting means removably connectable to said support member and defining a transparent portion extending over said first display, said transparent mounting including an upper portion which has a U-shaped bend defining a slot dimensioned to frictionally engage an upper edge of said front panel;

ledge means positioned along a lower front portion of said support member;

a second display positioned and relatively loosely supported on said ledge means in front of said transparent mounting means; and



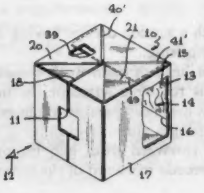
means for supporting said second display against said transparent mounting means.

4,365,432

FOLDABLE VIEWER

John W. McCauley, 23351 Burbank Blvd., Woodland Hills, Calif. 91367, and Stephen Paul, 6525 Cleon Ave., North Hollywood, Calif. 91607

Filed Aug. 17, 1981, Ser. No. 293,250
Int. Cl.³ G02B *27/04*; G09F *1/08*; A63H *33/00*
U.S. Cl. 40—365 **1 Claim**



1. In a foldable viewer for enclosing a graphic, pictorial or message display comprising the combination of:

a blank sheet folded over upon itself to provide an enclosure having a continuous sidewall, a top and a bottom;

a predetermined surface area carried on said blank constituting an interior wall surface;

display data carried on said surface area;

a viewing aperture provided in said continuous wall in a location opposite to said surface area so that said display data is visible therethrough;

said enclosure includes a first condition which is characterized as being folded and flat and a second condition which is characterized as being unfolded and expanded into its operative position;

said viewing aperture employed for conducting pressurized air therethrough for inflatably expanding said enclosure from its first condition into said second condition;

said blank is provided with a plurality of creases constituting hinge or fold lines about which selected portions of said blank are folded to form said enclosure;

certain ones of said selected portions of said blank provide pockets for insertably receiving other certain ones of said selected portions so as to bind or hold said enclosure together into a unitary construction;

said blank is a square initially folded diagonally between opposite corners to establish an apex or center;

said display data appearing across said apex;

said apex appearing directly opposite said viewing aperture when said enclosure is in its expanded or second condition; and

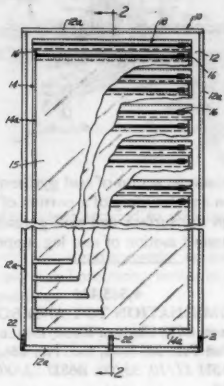
said creases are scored along the surface of said blank.

4,365,433

NAUTICAL CHART CASE

Calvin D. Buell, 1077 Holly Spring La., Grand Blanc, Mich. 48439

Filed Jun. 29, 1981, Ser. No. 278,734
Int. Cl.³ B42F 17/22
U.S. Cl. 40—391 7 Claims



1. A chart case for holding a plurality of separate charts, comprising:

a flexible cover;

a plurality of chart holders having transparent front portions and mounted on the inner side of said cover, each of said holders having a zipper type closure and opening means proximate one edge thereof;

means including a separate zipper for securing said holders to said cover in hinged, stacked relationship one relative to the other; and

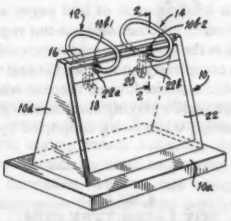
means fixed to said cover for closing and retaining it in a closed roll-up position.

4,365,434

DISPLAY STAND FOR SHEET MATERIAL SUCH AS PHOTOGRAPHS

John S. Doyel, 404 W. 20th St., New York, N.Y. 10011

Filed Oct. 22, 1981, Ser. No. 313,745
Int. Cl.³ G09F 19/00
U.S. Cl. 40—530 4 Claims



1. A display stand for sheet material such as photographs comprising:

a base and a front and a back wall which slant toward each other in extending upwardly from the base and are integrally formed therewith from molded plastic material, each wall having at its top edge a pair of spaced-apart, open top notches aligned with those of the other wall;

a pair of open sleeves each extending downwardly from a respective aligned pair of said notches and located between said walls and secured thereto;

a pair of ring members each made of integrally molded resilient plastic material and comprising an oval ring and a post which extends away from the ring along the short diameter thereof, said ring being split at one side of the post and each post being shaped and dimensioned to fit within a respective one of said sleeves, with the connected end of the ring resting on the respective notch in the back wall and the free end of the ring resting on the respective notch in the front wall;

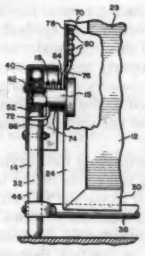
whereby sheets such as photographs, cards, transparent envelopes or the like which have at a margin thereof a pair of holes aligned with said ring can be loaded onto the display stand by pulling the side of the ring which has the free end thereof away from the adjacent wall and then allowing said free ends to snap back through said holes.

4,365,435

PORTABLE SIGN

H. Kent Snyder, Jr., River Forest, Ill., assignor to Chicago Display Company, Chicago, Ill.

Filed Nov. 3, 1980, Ser. No. 203,701
Int. Cl.³ G09F 15/00, 7/00; E04G 3/00
U.S. Cl. 40—608 10 Claims



1. A portable sign comprising:

a display frame;

a base for supporting the display frame and having a front end and a rear end;

means for pivotably supporting the display frame on the base along a pivot axis;

first and second stops, the first stop positioned on one side of the base forward of the pivot axis, the second stop positioned on an opposite side of the base aft of the pivot axis, such that the second stop is diagonally opposite the first stop;

a first spring having a first end, a second end an an intermediate coil;

means for mounting the first spring between the display frame and the base, such that the second end engages the first stop and tightens the coil of the first spring when the display frame is pivoted forward of an upright position and the second end of the first spring disengages from the first stop when the display frame is pivoted backward from an upright position in order that the first spring and first stop cooperate to restore the display frame to an upright position when the display frame is tilted forward, without unwinding the first spring;

a second spring, having a first end, a second end, and an intermediate coil;

means for mounting the second spring between the display frame and the base, such that the second end engages the second stop and tightens the coil of the second spring when the display frame is pivoted backward from an upright position and disengages the second end of the second spring from the second stop when the display frame is pivoted forward from an upright position in order that the second spring and the second stop cooperate to restore the display frame to an upright position when the

display frame is tilted backward without unwinding the second spring.

4,365,436

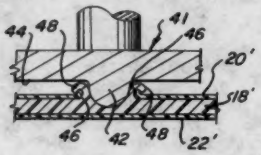
DISPLAY PANEL AND METHOD OF MAKING SAME

Eugene B. Ritchey, Rte. 2, Box 58, Brighton, Colo. 80601

Continuation-in-part of Ser. No. 23,547, Mar. 26, 1979, abandoned, which is a continuation of Ser. No. 755,646, Dec. 30, 1976, abandoned. This application Apr. 28, 1980, Ser. No. 144,699

Int. Cl.³ G09F *19/00;* **B05D** *3/00;* **B41L** *1/16;* **B26D** *3/08*

U.S. Cl. 40—615 **6 Claims**



1. A method of producing a panel having a highly recognizable indicia display thereon, said method comprising:

providing a panel of sheet-like material with a substratum of a first selected property and at least one superstratum of a second selected property contrasting with the first property and connected to the substratum;

the superstratum and the substratum each being formed of meltable material;

providing an indicia-forming tool having a heated stylus;

pressurally applying the stylus of the tool to the superstratum and moving it along the superstratum in a predetermined path to melt localized portions of the material of the superstratum throughout its thickness as the stylus progressively comes in contact therewith and forcing the melted portion of the superstratum out of the path of movement of the tool to leave the corresponding portions of the substratum exposed to define indicia of said first selected property with a background on the superstratum of said second selected property;

causing the melted portion of the superstratum to solidify in displaced position forming a ridge above the surface of the panel and along the margins of the indicia;

applying the tool with sufficient pressure to melt a portion of the substratum and cause the melted portion of the substratum to be displaced and to flow over the superstratum ridge; and

causing the melted portion of the substratum to solidify in displaced position extending over the ridge formed from the superstratum to increase the recognizability of the indicia by forming a border around the indicia of said first selected property.

4,365,437

GYROSCOPIC WALKING TOY

John W. Jameson, 191 Heather La., Palo Alto, Calif. 94303

Filed Apr. 15, 1981, Ser. No. 254,504

Int. Cl.³ A63H *11/14*

U.S. Cl. 46—150 **7 Claims**

1. A walking toy comprising

a housing adapted to be positioned for motion in at least one given horizontal direction,

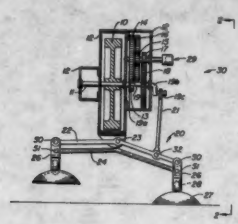
a gyroscopic element for rotation,

means for supporting said gyroscopic element from said housing for rotation in a substantially vertical plane,

leg support means connected to said housing for supporting said housing on a support surface,

said leg support means including a leg frame connected to at least two spaced apart feet, and

means for pivotally mounting said feet from said leg frame whereby said housing and leg frame are able to pivot around one of said feet while the other of said feet is elevated above the support surface



whereby gyroscopic action of said gyroscopic element during rotation enables lifing of a portion of said leg support means from the surface and said gyroscopic action also enables forward motion of said leg support means.

4,365,438

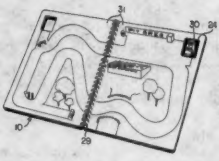
COMBINATION TOY AND BOOK

Herman E. Nelson, 3618 Chateau Knoll, Bettendorf, Iowa 52722

Filed Feb. 23, 1981, Ser. No. 236,875

Int. Cl.³ A63H *11/10, 33/00;* **B65D** *73/00;* **G09F** *3/18*

U.S. Cl. 46—202 **8 Claims**



1. A combination toy article comprising a removable three dimensional toy vehicle having at least one rotatable supporting wheel and a book having a plurality of relatively heavy pages, each of said pages containing graphic material in the form of a different illustrated scene or game, each of said pages further containing a cut-out region which cooperates with said scene or game and which aligns with all other cut-out regions to form a well at least large enough to completely receive and contain said three dimensional toy vehicle when the book is closed, means for binding each of said pages along one edge such that when bound together said cut-out regions cooperate to form said well in the book with said removable three dimensional toy means completely housed within said well, the pages having said graphic material formed thereon which cooperates with said toy to provide a playing surface, along which the toy means may be moved while being supported by said rotatable wheel.

4,365,439

TOY LASER-TYPE GUN

Zbigniew Litynski, 5150 S. Newland Ave., Chicago, Ill. 60638

Filed Sep. 2, 1980, Ser. No. 183,001

Int. Cl.³ A63H *33/26*

U.S. Cl. 46—227 **21 Claims**

1. A toy gun having a generally cylindrical main body secured to a grip for simultaneously producing sounds and emitting light pulses when a trigger is depressed, comprising:

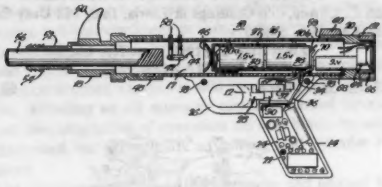
a front end piece secured to a front portion of said main body and having a barrel,

a light source secured within said main body;

first light transmission means secured within said barrel and extending into said main body on one side of said light

source for transmitting light pulses developed by said light source along the axis of said cylindrical main body;

a rear end piece secured to a rear portion of said main body and having a back end surface;



sound producing means secured to said back end surface; and

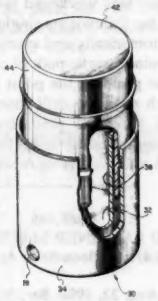
actuation means for simultaneously actuating said light source and said sound producing means in response to said trigger depression.

4,365,440

LEAKAGE RESISTANT CONTAINER FOR PLANT INJECTION APPARATUS

Donald D. Lenardson, Sun Valley, Calif., assignor to J. J. Mauget Co., Burbank, Calif.

Filed Jul. 23, 1981, Ser. No. 286,208
Int. Cl.³ A01G *29/00*
U.S. Cl. 47—57.5 **2 Claims**



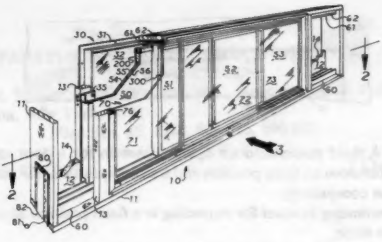
1. A two component, telescopically compressible, hollow container for plant injectable fluid compositions which includes hermetic sealing means extending between the telescopic portions of said container to prevent leakage through capillary film formation, wherein said components are telescopically compressible from an outer position of an enlarged interior volume to an inner position of reduced interior volume and said hermetic sealing means are defined by a plurality of perimetrical ridges which project outwardly from a first of said container components into positive engagement with a second of said container components with said plurality of ridges including an uppermost perimetrical ridge that projects outwardly to a lesser extent than the other ridges in said plurality of ridges, and wherein said hermetic sealing means further includes a single perimetrical ridge that projects outwardly from the second of said container components into positive engagement with the first of said container components at a locus proximate to said uppermost ridge when said container is disposed in the outer position.

4,365,441

SHUTTER SHIELDS (TM) IN COMBINATION WITH AN OUTER AND INNER GLASS AREA MEANS

James D. Davidson, P.O. Box 1293, Pontiac, Mich. 48056

Continuation of Ser. No. 114,662, Jan. 23, 1980, which is a continuation-in-part of Ser. No. 39,049, May 16, 1979, Pat. No. 4,267,666, which is a continuation-in-part of Ser. No. 912,186, Jun. 5, 1978, abandoned, which is a continuation-in-part of Ser. No. 776,448, Mar. 10, 1977, abandoned. This application Mar. 16, 1981, Ser. No. 243,704
Int. Cl.³ E05B *65/04*
U.S. Cl. 49—63 **8 Claims**



1. An improved thermally insulated shutter shield device having an outer periphery support frame means in combination with a glass area unit commonly called a window, glass sliding door or glass wall, mounted in a building structure having upright walls, said glass area unit including a glass area frame and glass panel means mounted in said glass area frame, said shutter shield device having first and second parallel track means spaced inwardly of said window unit and having a spacing therebetween at least equal to one height dimension and being parallel to said glass area means;

laminate insulative shield means mounted in said track means for movement between positions adjacent to the side of said glass area unit and in front thereof, to block off the entirety of said glass area means, low friction means for supporting said laminate insulative shield means for movement on said track means, said laminate insulative shield means including a frame movably supported on said track means and having a rigidifying means and an insulation material layer mounted in said frame, said insulative material layer having little resistance against breakage when forces are applied in directions perpendicular to the plane thereof, said rigidifying means providing a rigidification of said insulative material against the effects caused by forces applied from the outside in directions perpendicular to the plane thereof; and

seal means for effecting a seal around the periphery of said glass panel means and between said glass area unit frame means and said insulative shutter shield means, thereby defining a sealed chamber,

wherein the improvement comprises:

a second glass area means including a glass area frame means having at least one glass panel means movably mounted in said glass area frame means,

said glass panel frame means is mounted inwardly of said thermally insulated shutter shield device, fastened to said shutter shield outer periphery support frame means in a parallel mode to said shutter shield device means, said inner movable glass panel means provides access to manually hand close or open said thermally insulated shutter shields; and

a second seal means for effecting a seal around the periphery of said second movable glass panel means and between said second glass area unit frame means and said insulative shutter shield device means thereby defining a second sealed chamber, thusly

improving the overall R-factor of said combination reducing

heat transfer either direction through said first and second glass area means reducing heating and air conditioning cost of said building, whereby energy is conserved.

4,365,442

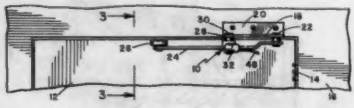
AUTOMATIC DOOR CONTROL SYSTEM

Harold A. Speer, 718 Front St., San Diego, Calif. 92101

Continuation-in-part of Ser. No. 58,153, Jul. 17, 1979, abandoned. This application Sep. 24, 1980, Ser. No. 190,477

Int. Cl.³ E05F *11/24*

U.S. Cl. 49—346 **14 Claims**



1. A fluid powered door opening system for a door moveable between an open position and a closed position, the combination comprising:

a mounting bracket for mounting in a fixed position adjacent a door;

a linear fluid motor pivotally mounted on said bracket;

an arm pivotally mounted on said bracket for extending parallel to the face of a door and connected to said fluid motor for unidirectional engagement with and application of force to the face of a door for moving the door in a direction away from said fluid motor to an open position;

a source of pressurized fluid for powering said motor; and

a control system for selectively communicating said pressurized fluid to said fluid motor for operation thereof for moving a door to the open position.

4,365,443

DOOR FOR AN AUTOMOTIVE VEHICLE

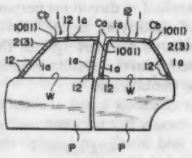
Eiichi Miura, Kamakura, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jun. 4, 1980, Ser. No. 156,305

Claims priority, application Japan, Jun. 4, 1979, 54-69668

Int. Cl.³ B60J *5/04*

U.S. Cl. 49—502 **8 Claims**



1. A door for an automotive vehicle, comprising:

a door panel positioned at the lower portion of the door;

a door sash fixed to the door panel so as to receive a glass therein;

a door sash moulding overlying the outer surface of the door sash for protecting the door sash; and

a non-metallic resilient material interposed between the door sash and the door sash moulding so as to prevent the door sash moulding from directly contacting the door sash, the door sash and the door sash moulding being made of different metals, the resilient material being separated into a plurality of pieces which are provided at the corners, ends, and intermediate portions of the door sash, each of the pieces at the corners being formed as one body and being curved along the outline of the corner so that each corner piece extends along two adjacent side portions of the door sash at the corner thereof.

4,365,444

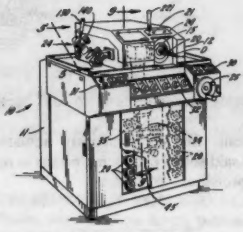
DRILL POINT GRINDING MACHINE

John C. Chwae, c/o Giddings & Lewis, Inc., 142 Doty St., Fond du Lac, Wis. 54935

Filed Jun. 24, 1980, Ser. No. 162,547

Int. Cl.³ B24B *3/26*

U.S. Cl. 51—94 R **50 Claims**



1. A drill point grinding machine comprising:

a frame,

a rotary grinding wheel mounted on said frame and having a grinding surface,

a workhead for rotatably supporting the shank of a drill to be ground,

means for rotating a drill supported in said workhead,

means mounting said workhead for movement relative to said frame and grinding wheel, and

means for moving said workhead while the drill is rotated therein such that following a single set-up of the machine the drill is automatically and successively moved in (1) a first predetermined cyclic path of contact with said grinding surface for grinding the point of said drill with land surfaces which meet the drill shank with a curved contour, and (2) a second predetermined cyclic path of contact with said grinding wheel for grinding the point of said drill with a forwardmost raised helical shaped tip.

4,365,445

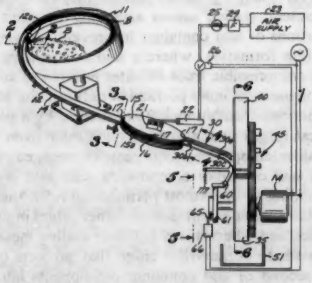
AUTOMATED FASTENER MACHINING SYSTEM

John R. Watson, 21418 S. Bloomfield, Apt. 66, Lakewood, Calif. 90715

Filed Aug. 22, 1980, Ser. No. 180,354

Int. Cl.³ B24B *5/18*

U.S. Cl. 51—103 WH **3 Claims**



1. Apparatus for advancing fastener blanks into a machine conformed as a centerless grinder having a grinding wheel

geared to rotate adjacent a feed wheel, and a head stop mounted between said grinding and feed wheels, comprising:

a vibratory feeder assembly adapted to receive, in random alignment, a plurality of said blanks and rendered operative to align said blanks in a coherent vertical alignment;

a guide connected to said feeder assembly for receiving said blanks in a row and for inverting the alignment thereof;

an indexing cylinder deployed proxim[illegible]the output of said guide and conformed to receive in su[illegible]on the end ones of said row of blanks, said cylinder i[illegible]ling peripheral recesses conformed to receive said bl[illegible]s and advancing means, including an air operated piston rendered operative at the completion of operation on said blank by said machine tool, for periodically advancing said cylinder in rotation;

a turning chute mounted along said cylinder and aligned to receive said blanks, in sequence, contain in said recesses, said chute being convolved to align the descent by gravity of said blanks therethrough to a horizontal position; said head stop being mounted on said machine tool and aligned with said turning chute for directing said blanks into said machine tool and for opposing the withdrawal thereof said head stop includes a pivotal mount for articulation thereabout; and

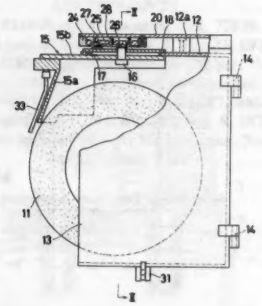
said feed wheel includes a first and second cam respectively connected to enable said air operated piston and to articulate said head stop according to the rotation of said feed wheel.

4,365,446

GUARD DEVICE FOR A GRINDING WHEEL IN A GRINDING MACHINE

Kenichi Munekata; Yasuo Suzuki, both of Kariya, and Norio Ohta, Chiryu, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Jan. 26, 1981, Ser. No. 228,352
Claims priority, application Japan, Jan. 24, 1980, 55-7849[U]
Int. Cl.³ B24B *55/04*
U.S. Cl. 51—268 **5 Claims**



1. A guard device for a grinding wheel in a grinding machine comprising:

a guard body for covering said grinding wheel, said grinding wheel being rotatably mounted upon a wheel support, and said guard body having a side opening;

a side guard plate pivotably mounted upon said guard body for covering said side opening;

a front cover member slidably mounted upon the top portion of said guard body for covering the upper front portion of said grinding wheel;

a latch member mounted on said front cover member;

a locking member pivotably mounted at one end thereof upon the top portion of said guard body and engageable at the other end thereof with the top portion of said side guard plate to lock said side guard plate in a closed position wherein said side opening is covered;

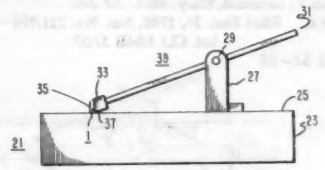
a saw-toothed member engageable with said latch member to restrict movement of said front cover member in one direction away from the periphery of said grinding wheel, but to allow movement of said front cover member in the opposite direction, said saw toothed member being operatively connected to said locking member so as to be disengaged from said latch member when said locking member is pivoted to be disengaged from the top portion of said side guard plate.

4,365,447

APPARATUS AND METHOD FOR SHARPENING A CUTTING STYLUS

Anil R. Dholakia, East Windsor, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 25, 1980, Ser. No. 190,647
Int. Cl.³ B24B *19/00*
U.S. Cl. 51—277 **7 Claims**



1. Apparatus for orienting a cutting stylus, having a mounting face and a cutting face used to cut video signal information in a metal master, said apparatus comprising the combination of:

a base member having a flat surface; and

a stylus holding feature having a stylus attaching face, said stylus holding fixture being arranged on said flat surface of said base member such that said attaching face is positioned at an angle with respect to said flat surface which is equal to the angle between said cutting face and said mounting face of said cutting stylus and said cutting face of said stylus is presented at a given orientation when said stylus holding fixture having said stylus mounted thereon is mounted in a grinding machine for stylus resharpening;

said cutting stylus being bonded to said stylus attaching face of said stylus holding fixture with an adhesive;

said flat surface of said base member being formed of a material that does not bond to the adhesive used to bond said cutting stylus to said stylus attaching face.

4,365,448

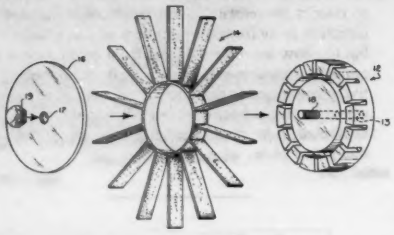
SANDING WHEEL

Byron Wilson, 3650 Green Acre Rd., Oakland, Calif. 94619

Filed Jul. 14, 1980, Ser. No. 168,747
Int. Cl.³ B24B *9/02*
U.S. Cl. 51—334 **1 Claim**

1. An abrasive element for a rotary sander comprising an elongated strip of flexible substrate having an abrasive material affixed to an outer surface, said strip being configured in a continuous endless loop with outwardly folded flaps each separated by a short section and said substrate contacting at each fold, means attaching each side of said folded flaps together at least in the base of each fold to provide a circular portion with radial flaps presenting an abrasive outer surface

on each side of each flexible flap, and a substantially rigid ring disposed interiorly of said strip and contacting each of said



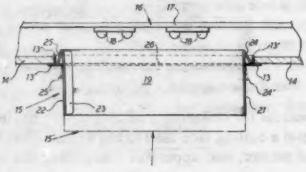
short sections between said folded flaps with means securing said strip to said ring at said short sections.

4,365,449

HONEYCOMB FRAMEWORK SYSTEM FOR DROP CEILINGS

James P. Liautaud, 70 Bluff Rd., Cary, Ill. 60013, assignor to James P. Liautaud, Cary, Ill.

Filed Dec. 31, 1980, Ser. No. 221,771
Int. Cl.³ E04B 5/60
U.S. Cl. 52—28 **14 Claims**



1. A drop ceiling framework system for use in a drop ceiling formed of a grid of inverted T-shaped channels with rectangular removable ceiling tiles resting on rectangular support frames formed by the grid of T-shaped channels, and wherein a light source means is provided above the drop ceiling, comprising:

a rectangular cardboard framework having an open top and bottom and being formed of four interconnected side walls;

the rectangular framework being dimensioned to closely fit in a plurality of the rectangular support frames of the drop ceiling in place of the ceiling tiles so that light is substantially blocked from passing between each side wall and an adjacent portion of the rectangular support frame; and

at least two of the side walls opposite one another having a locking flap at a top thereof formed of a hinged portion adapted to fold flush against an outside surface of the associated side wall during upward insertion of the cardboard framework into and through one of the ceiling rectangular support frames and then spring outwardly into a locking position after clearing a horizontal portion of the T-shaped channel and abut in a corner portion of the T-shaped channel formed between vertical and horizontal portions thereof.

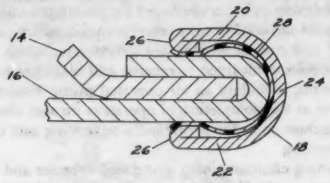
4,365,450

DOOR EDGE GUARD

Robert Adell, Novi, Mich., assignor to U.S. Product Development Co., Novi, Mich.

Filed Oct. 7, 1980, Ser. No. 194,748
Int. Cl.³ B60J 5/00
U.S. Cl. 52—98 **6 Claims**

1. In a vehicle body having a sheet metal closure, such as a door, on a marginal edge portion of which is disposed an ornamental and protective metallic edge molding of generally U-shaped cross section comprising an inner leg and an outer leg whose free ends bear against opposite sides of said marginal edge portion and a plastic liner disposed between the metallic edge molding and the closure marginal edge portion, including the location where the free ends of the legs bear against the closure marginal edge portion, to insulate the molding from the



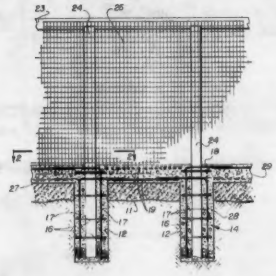
closure, the metallic edge molding being applied to the closure marginal edge portion by moving the metallic edge molding toward the closure marginal edge portion in a direction generally transverse to the length of the metallic edge molding, the improvement characterized in that the liner comprises a thin sheet of grained plastic film arranged with the grain running generally lengthwise of the edge molding.

4,365,451

POURED ADOBE BUILDING CONSTRUCTION AND METHOD OF FORMING SAME

Lynn S. Nelson, 162 Christen Dr., Pacheco, Calif. 94553

Filed Jan. 8, 1980, Ser. No. 110,362
Int. Cl.³ E02D 27/00
U.S. Cl. 52—169.9 **9 Claims**

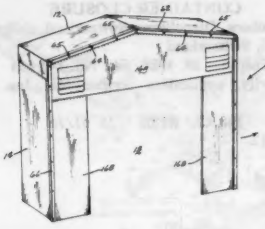


1. In combination, a poured adobe building having a foundation, a plurality of vertical, longitudinally spaced posts extending up from said foundation, having inner and outer faces, said posts being substantially centrally located relative to the inside and outside of said wall, inner and outer removable, reusable forms on opposite sides of said wall spaced outwardly of said inner and outer faces, severable tie means securing said forms aligned and accurately spaced apart, said forms having sheets of porous material to permit escape of water from between the forms, said porous material being removable with said forms, and a slurry of adobe, filler material and water poured between said forms, said foundation comprising concrete formed in a trench along the wall and in holes dug at intervals along said trench, the lower ends of said posts fitting into said holes.

4,365,452
LOADING DOCK CANOPY

Russell L. Fillman, Colorado Springs, Colo., and Young Z. Yoon, Indianapolis, Ind., assignors to Woodford Manufacturing Company, Colorado Springs, Colo.

Filed Jun. 4, 1981, Ser. No. 270,227
Int. Cl.³ E04H *14/00, 6/30*; E06B *3/50, 1/06*
U.S. Cl. 52—173 DS **14 Claims**



10. A loading dock canopy, comprising,

a frame means adapted to be secured to a building around a loading access opening, said frame means having a top, opposite sides, an inner face adapted to be placed adjacent said building, an outer face located outwardly from said building, and a center access opening adapted to be in alignment with the loading access opening of said building,

each side of said frame means including inner and outer vertical members,

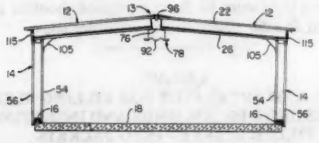
and a pair of vertically spaced-apart compression springs connected to and extending between said vertical members on each side of said frame means to resiliently hold said vertical members apart,

each compression spring having inner and outer ends and said outer end being movable vertically and laterally of and toward and away from said inner end.

4,365,453
FRAMELESS METAL BUILDING AND BUILDING COMPONENTS

Colin F. Lowe, 5214 Sanford, Houston, Tex. 77035

Continuation-in-part of Ser. No. 59,575, Jul. 23, 1979, Pat. No. 4,301,628, which is a continuation-in-part of Ser. No. 969,342, Dec. 14, 1978, which is a continuation-in-part of Ser. No. 931,854, Aug. 7, 1978, Pat. No. 4,221,087, which is a continuation-in-part of Ser. No. 831,781, Sep. 9, 1977, Pat. No. 4,106,245. This application Apr. 16, 1980, Ser. No. 140,764
Int. Cl.³ E04B *7/02*
U.S. Cl. 52—478 **16 Claims**

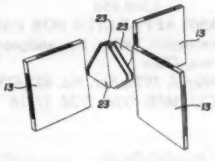


1. A panel assembly adapted to form a generally flat load bearing frameless wall for a metal building, comprising a series of elongated thin sheet metal panels forming generally flat elongated inner skin portions and generally flat elongated outer skin portions with generally flat elongated web portions extending between said inner and outer skin portions, fastener means connecting said panels with said outer skin portions and said web portions forming parallel spaced and longitudinally extending primary corrugations each having a U-shaped cross-sectional configuration, said inner and outer skin portions having longitudinally extending and parallel spaced secondary corrugations forming ribs substantially smaller than said primary corrugations, a plurality of spacer members disposed within said primary corrugations and secured to said web portions, at least one of said spacer members including a spacer of molded plastics material and having a corrugated outer flange portion projecting into said secondary corrugations within the adjacent said outer skin portion to stabilize said ribs, each said web portion being formed by a sheet metal panel separate from said sheet metal panels forming the adjacent said inner and outer skin portions and having at least one longitudinally extending secondary corrugation forming a rib, said sheet metal panel forming each said web portion having bent inner and outer longitudinal U-shaped edge portions defining corresponding longitudinally extending said ribs, and said sheet metal panels forming said generally flat inner and outer skin portions having bent opposite longitudinal U-shaped edge portions forming corresponding said ribs overlapping the adjacent ribs of said web portions.

4,365,454
CONSTRUCTION SYSTEM

John M. Davis, Berlin, Mass., assignor to Cubit Corporation, Stowe, Mass.

Division of Ser. No. 13,086, Feb. 21, 1979. This application Mar. 17, 1981, Ser. No. 244,331
Int. Cl.³ E04C *1/10*
U.S. Cl. 52—586 **6 Claims**



1. Construction system, comprising:

(a) a main body formed of a light-weight material having a plurality of sides each of which has a recess, and

(b) a connecting member having hinge line formed by a score on each side and dividing the member into two parts, each part being formed to fit snugly into one of the said recesses in the main body, said member being relatively resistant to bending except along said hinge line, the recess being twice as thick as a single connecting member, the main body and the member being formed from a material consisting of two sheets of paper between which is sandwiched a layer of foamed plastic.

4,365,455
METHOD OF BUILDING CONSTRUCTION

William G. Braine, 7 Brodie St., Christchurch, New Zealand

Continuation of Ser. No. 908,566, May 22, 1978, abandoned. This application Aug. 8, 1980, Ser. No. 176,559
Claims priority, application New Zealand, May 23, 1977, 184184
Int. Cl.³ E04B *1/34*; E04C *3/00*
U.S. Cl. 52—741 **33 Claims**

1. A method of constructing a construction shell, the method comprising the steps of:

constructing a building foundation of a desired shape;

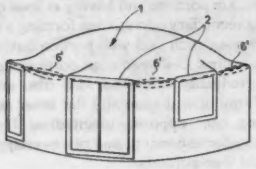
fixing a sheet of thin flat elastic material to the foundation to form a substantially airtight seal therebetween;

inflating the sheet of thin material to form a double curvature shape and the configuration of a shell on the foundation;

propping selected parts of the sheet of thin material with internally positioned formers which shape the sheet of material around window and door spaces;

positioning window and door frames externally of the sheet of material and in association with the internally positioned formers;

applying a strengthening and stiffening material to the outside of the sheet of thin flexible material progressively to form a strengthened shell former in which the areas within the externally positioned window or door frames are free



from the strengthening and stiffening material; and applying a coating of at least one layer of structural coating material on the outside of the strengthened and stiffened shell former;

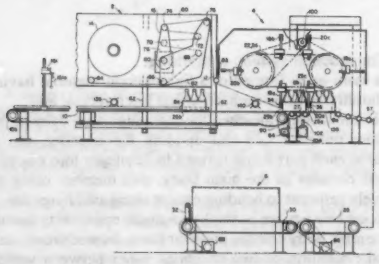
and removing the internally positioned formers whereby there is formed a constructional shell for a building of any desired shape which can be used for a variety of different building constructions.

4,365,456

METHOD OF AND APPARATUS FOR PACKAGING

John E. Ullman, Huntingdon Valley, Pa., assignor to The Mead Corporation, Dayton, Ohio

Filed May 5, 1976, Ser. No. 683,611
Int. Cl.³ B65B *7/16, 7/28, 51/18*
U.S. Cl. 53—69 **17 Claims**



1. In a non-adhesive packaging machine for forming a composite package including a paperboard tray containing a plurality of articles and capped with a film sheet, each tray having a bottom and upstanding walls extending therefrom with a first pair of spaced-apart walls connected together by a second pair,

means for disposing a surface-treated film sheet over the articles and over the upper portion of said first pair of walls,

means for pressing and heating said sheet against said first pair of walls to bond said film sheet to said pair of walls by its own substance to form a strong paper-tearing bond with the film sheet in intimate laminar contact with said paperboard without the use of an adhesive to cap the article-filled tray with said sheet,

said machine being without adhesive-applicator means for applying adhesive to said tray,

means for releasing said tray from the pressing and heating means and allowing the bond to cool to ambient temperature,

said pressing and heating means including a plurality of flight bars,

means conveying said flight bars in an orbital path and pressing said flight bars against said sheet and said first pair of walls in a bonding station,

said conveying means operating without stopping in the bonding station,

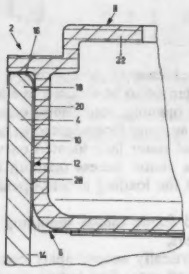
and heating means connected to said flight bars for heating said bars and the sheet pressed against the tray by the bars to form said bond.

4,365,457

CONTAINER CLOSURE

Walter Schellenberg, Diepoldsau, Switzerland, assignor to Max Sandherr AG, Switzerland

Filed Apr. 28, 1980, Ser. No. 143,463
Claims priority, application Switzerland, Jun. 18, 1979, 5674/79
Int. Cl.³ B65B *7/28, 61/18*
U.S. Cl. 53—412 **9 Claims**



1. A method for producing a closure for a container comprising the steps of

preforming a foil membrane into a cup-like shape having a generally cylindrical wall with upper and lower substantially cylindrical portions, a transverse wall at one end and an outward annular flange at the other end; forming an annular radially extending shoulder between said upper and lower cylindrical portions of said cylindrical wall to offset said upper and lower portions from each other and compressing the membrane material of said shoulder to a thickness significantly less than that of the adjacent membrane material in said upper and lower portions;

inserting the preshaped membrane into a tubular container with the flange overlying the container edge;

shaping the shoulder and the cylindrical portion between the shoulder and the one end to conform to the container wall; and

sealing the cylindrical wall to the interior wall of the container on both sides of the compressed shoulder and the outward annular flange to the container edge.

4,365,458

METHOD AND APPARATUS FOR FILLING SLEEVES WITH FINISHED DISC RECORDS AND INSERTING THE FILLED SLEEVES INTO JACKETS

Leonard Palmer, and Jack A. Palmer, both of Morristown, N.J., assignors to Lened, Inc., Elizabeth, N.J.

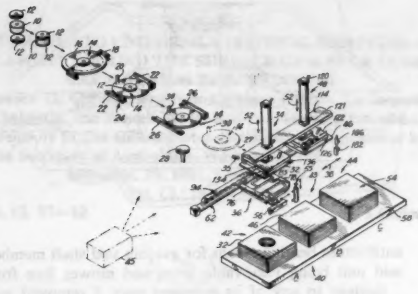
Filed Jul. 9, 1980, Ser. No. 167,097
Int. Cl.³ B65B *43/28, 43/36, 55/04*
U.S. Cl. 53—449 **34 Claims**

1. A method for enclosing finished disc records in sleeves individually, and the record-filled sleeves in jackets individually, and arranging the jackets with the finished records therein in a stack, comprising the steps of:

(a) pushing a finished record disc along a first path;

(b) raising an empty sleeve from a stack of empty sleeves to the level of said first path;

(c) opening said raised sleeve and receiving therein said pushed record;
(d) moving said record-filled sleeve along a second path from a position above said stack of empty sleeves to a position above a stack of empty jackets;
(e) raising an empty jacket from said stack of empty jackets,



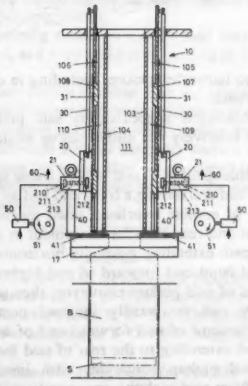
opening the end of said raised jacket and subsequently inserting therein said record-filled sleeve;
(f) transporting said jacket filled with said record-filled sleeve from said position above said stack of empty jackets to a position above a stack of record-filled jackets; and,
(g) depositing said jacket with said sleeved record therein onto a stack of similarly filled jackets.

4,365,459

APPARATUS FOR PRODUCING BAG PACKAGES

Bruno Gründler, Neuhausen am Rheinfall, Switzerland, assignor to SIG - Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland

Filed Dec. 30, 1980, Ser. No. 221,446
Claims priority, application Switzerland, Jan. 4, 1980, 37/80
Int. Cl.³ B65B *9/08, 41/14*
U.S. Cl. 53—552 **10 Claims**



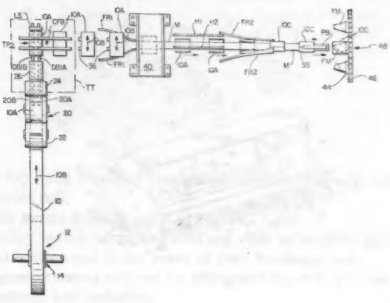
1. In apparatus for producing bag packages and including a shaping mandrel presenting a shaping surface and a longitudinal seal forming device for forming a panel of sealable material into a tube and transverse sealing jaws and severing blades for dividing the tube into individual bags, the improvement wherein said mandrel comprises means defining two carriages mounted at diametrically opposite sides of said mandrel and forming at least in part the shaping surface of said mandrel, and said apparatus further comprises clamping members each mounted to face a respective carriage and to be moved toward said shaping mandrel to press the tube against said carriages and thus clamp the tube; and means connecting said carriages and clamping members together for movement in unison in the longitudinal direction of said mandrel.

4,365,460

METHOD AND APPARATUS FOR MANUFACTURING FOAM PLASTIC CONTAINERS BY USE OF A TUBULAR FORMING MANDREL

Allan K. Cress, Baltimore, and Charles E. Busse, Jarrettsville, both of Md., assignors to Maryland Cup Corporation, Owings Mills, Md.

Continuation of Ser. No. 899,848, Apr. 25, 1978, abandoned, and a continuation-in-part of Ser. No. 665,617, Mar. 10, 1976. This application Jul. 17, 1980, Ser. No. 169,896
Int. Cl.³ B65B *3/02, 43/08*
U.S. Cl. 53—563 **28 Claims**



1. Means for forming a cylindrical blank from a rectangular blank of foam plastic sheet material comprising:
conveyor means feeding said rectangular blank along a predetermined path transversely of its length at a predetermined continuous rate;
cylindrical mandrel means positioned parallel with said predetermined path adjacent said conveyor means;
folding means adjacent said mandrel means over a portion of the length of the latter engaging and progressively folding said blank about said mandrel means while feeding said blank along said path to overlap the ends thereof on said mandrel means in the provision of a lapped seam;
heating means adjacent said path for progressively applying heat to each of the ends of said blank at independently selected temperatures for the respective said ends to prepare said blank for heating sealing of said lapped seam; and
sealing means adjacent said mandrel means downstream of said folding means for pressing said heated ends of said blank together to seal said lapped seam and for accelerating the resulting cylindrical blanks ahead of said conveyor means at a second faster predetermined rate and ejecting said cylindrical blank from said mandrel means.

4,365,461

IMPLEMENT FOR THE HARVESTING OF SEED-PRODUCING PLANTS BY MECHANICAL HARVESTER

Jürgen M. Schütt, Caracas, Venezuela, assignor to Instituto Venezolano de Investigaciones Cientificas (IVIC), Estado Miranda, Venezuela

Filed Oct. 30, 1980, Ser. No. 202,231
Int. Cl.³ A01D *14/02*
U.S. Cl. 56—14.3 **6 Claims**

1. An implement for harvesting seed-producing plants suitable for use with a mechanical harvester which comprises:
a chassis, constituted generally as a front hollow transverse

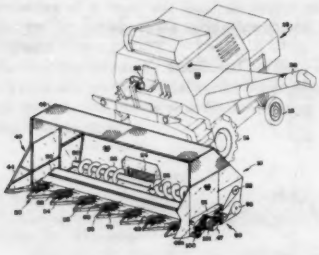
beam which extends along the entire width of the implement;

a self-bearing structure, supporting the said chassis, adapted to define a closed contour for the implement except for its front;

at least one pair of collector tray means borne by the transverse beam and adapted to extend, spaced apart from each other, towards the front of the harvester; said tray means being developed to define a large collection surface which extends at an inclination towards the rear of between about 10° and 15°;

static guide means defined on the cooperating edges of the adjacent tray means and spaced apart from each other which define narrow intermediate passage means which have a generally axial course;

a cutting station, provided at the end of each of the intermediate passages, provided with a disk-shaped cutting element adapted to cover the entire width of the end of the associated passage means;



a plant impelling mechanism associated with each cutting station, provided with projecting impelling means adapted to engage the plants and impel them along the associated intermediate passage means and bring the plants firmly and uniformly to beyond the cutting station;

a first drive mechanism for the cutter disks, adapted to cause them to turn at high speeds synchronously;

a second drive mechanism for the plant impelling mechanisms adapted to move said projecting impelling means provided on the said mechanisms at a relative speed of approach to the associated cutter means which is as close as possible to the speed of advance of the harvester; said first and second drive mechanisms extending separately within the front transverse beam of the chassis;

transmission means for connecting the first and second drive mechanisms to the power take-offs of the harvester, and

conveyor means arranged to the rear of the cutting stations to bring the cut plants into the harvester; said conveyor means being functionally coupled to the transmission means which moves the second drive mechanism so that its speed is directly related to the speed of the projecting impelling means.

4,365,462

MOWER HAVING SEPARATELY REPLACEABLE BEARING SUBASSEMBLY

Anton Werner, Saverne, and Horst Neuerburg, Haegen, both of France, assignors to Kuhn S.A., Saverne, France

Filed Jan. 26, 1981, Ser. No. 228,109

Claims priority, application France, Feb. 4, 1980, 80 02639

Int. Cl.³ A01D *55/18*

U.S. Cl. 56—255 **12 Claims**

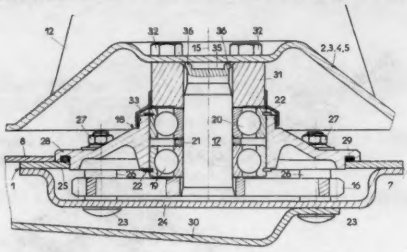
1. In a mower having a frame and a plurality of subassemblies supported by said frame, each subassembly including a rotatable disk,

in combination

at least one of said subassemblies forming a unit comprising driving means, including a driving gear member operable to rotate the disk of said unit,

a shaft member in driven connection with said driving gear member,

a coupling member in driven connection with said shaft member for coupling said disk to said shaft member, and



antifriction bearing means for guiding said shaft member, said unit being removable from said mower free from damage to any of its members only if removed as a whole.

4,365,463

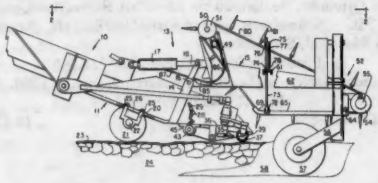
HARVESTING TOMATOES

Thomas S. Bettencourt, Isleton, and Daniel L. Freeman, Rio Vista, both of Calif., assignors to The Regents of The University of California, Berkeley, Calif.

Filed Jan. 7, 1981, Ser. No. 223,162

Int. Cl.³ A01D *45/00, 89/00*

U.S. Cl. 56—327 R **38 Claims**



1. A tomato harvester pickup, including in combination:

a pickup frame,

a pickup conveyor supported by said pickup frame and having a relatively flat initial pickup angle at its forward end,

an assist frame secured to said pickup frame spaced from said forward end and having a front end and an upper rear end,

a plurality of endless overhead assist means supported by said front and rear ends for movement in a loop in a continuous path extending generally horizontally rearwardly from said front end forward of and higher than said forward end of said pickup conveyor, then up steeply in an upwardly and rearwardly inclined portion beginning slightly forward of said forward end of said pickup conveyor and extending to the rear of said forward end well above said pickup conveyor, with increasing vertical spacing from said pickup conveyor to said rear end, and then downwardly and forwardly to said front end,

power means for moving each said assist means around its loop,

a series of long, individual, spike-like projections extending out substantially normally from each said assist means so that, along the generally horizontal portion of its path, the projections extend downwardly so that they can enter into tomato vines and engage them, and then carry the vines upwardly steeply along the steeply inclined portion of the loop, and

a series of vine-releasing means secured to the rear end of said assist frame and each extending downwardly from its point of securement and then curved to extend rearwardly from and beyond said assist frame and generally parallel to said pickup conveyor for freeing said vines from said assist means when said vines are over said pickup conveyor, thereby insuring transfer of the vines fully to said pickup conveyor.

4,365,464

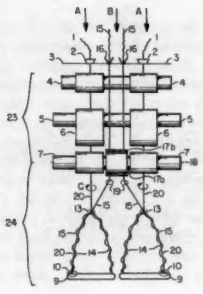
APPARATUS TO UNIFORMLY CONTROL WRAPPING A FILAMENT AROUND THE SURFACE OF A SPUN CORE YARN DURING RING SPINNING

Clarence O. Graham, Jr., New Orleans; Charles L. Shepard, Chalmette, and Russell M. H. Kullman, Harahan, all of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Jan. 28, 1981, Ser. No. 229,217

Int. Cl.³ D02G *3/36*

U.S. Cl. 57—12 **5 Claims**



1. An apparatus to uniformly control wrapping of a filament around the surface of a spun core yarn during ring spinnng comprising:

(a) means for drafting a fiber into a spun core yarn;

(b) means to feed the core yarn through a contact guide and into a ring spinning means;

(c) said ring spinning means to receive said core yarn, spin said core yarn, and rotate said core yarn on its longitudinal axis;

(d) means to over-feed a filament into the contact guide of (b) where the filament cohesively contacts the outer surface of the rotating core yarn, thus causing helical wrapping of the filament around the outer surface of the core yarn as the core yarn and filament are simultaneously fed through a balloon area located between the contact guide and ring spinning means.

4,365,465

STOP MOTION FOR SPINNING MACHINE

Heinz Müller, Harzerweg 15, D-7321 Sparwiesen; Max Hartmannsgruber, Bleicherwiesen 8, D-7312 Kirchheim, and Hermann Güttler, Porschestrasse 5, D-7333 Uhingen, all of Fed. Rep. of Germany

Filed Dec. 10, 1980, Ser. No. 214,836

Claims priority, application Fed. Rep. of Germany, Dec. 28, 1979, 2952533

Int. Cl.³ D01H *13/18*

U.S. Cl. 57—84 **20 Claims**

1. In a spinning machine, a drafting frame comprising an input roll pair including:

a bottom roll,

a top roll mounted above and cooperating with said bottom roll,

a spindle forming part of said top roll,

mounting means permitting said top roll to be lifted from said bottom roll in the event of yarn breakage; and

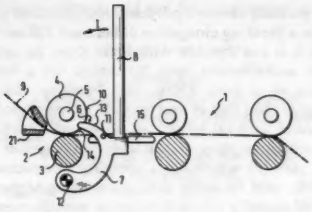
engagement means adapted for lifting said top roll upon yarn breakage and including

a lift element mounted for movement into lifting engagement with said spindle, and

means defining a clamping element carried by said lift element and movable by said movement of said lift element into lifting engagement with said spindle for engaging roving passing between said input roll pair and clamping the leading end of said roving against said top roll.

8. In a spinning machine, a drafting frame comprising input roll means including:

a bottom roll,



twin top rolls mounted above and cooperating with said bottom roll,

spindle means forming parts of said top rolls,

mounting means permitting said top rolls to be lifted from said bottom roll in the event of yarn breakage; and

engagement means adapted for lifting said top roll upon yarn breakage and including

a lift element means mounted for movement into lifting engagement with said spindle means of said top rolls, and

clamping means carried by said lift element and movable by said movement of said lift element into lifting engagement with said spindle means for engaging roving passing between said top and bottom rolls of said input roll means and clamping the leading end of said roving.

4,365,466

POLYESTER SPUN-LIKE TEXTURED YARN AND METHOD FOR MANUFACTURING THE SAME

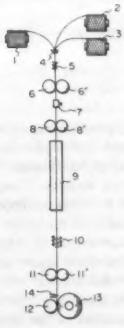
Takumi Horiuchi; Yoji Kuroda, and Kenji Hukatsu, all of Matsuyama, Japan, assignors to Teijin Limited, Osaka, Japan

Filed Jul. 9, 1981, Ser. No. 281,871

Claims priority, application Japan, Jul. 15, 1980, 55-95597

Int. Cl.³ D02G *1/02, 3/24*

U.S. Cl. 57—205 **7 Claims**



1. A polyester spun-like textured yarn comprising:

a core portion comprising a polyester multifilament yarn (A) which is not dyeable with ionic dyes; and

a wrapper portion comprising a polyester multifilament yarn (B) which is not dyeable with ionic dyes and a polyester multifilament yarn (C) which is dyeable with ionic dyes and together continuously wrapped about said core portion in an alternately twisted condition, wherein said multifilament yarn (B) and said multifilament yarn (C) are randomly mixed and entangled with each other in said wrapper portion and wherein some of the filaments constituting the wrapper portion are entangled and interlaced with some of the filaments constituting said core portion in the boundary region between said core portion and said wrapper portion in order to form an interlaced portion.

4. A method for manufacturing a polyester spun-like yarn comprising:

doubling a partially oriented polyester multifilament yarn (a) which has a breaking elongation of between 100 and 250% and which is not dyeable with ionic dyes, an undrawn polyester multifilament yarn (b) which has a breaking elongation of at least 250%, said breaking elongation being higher than that of said partially oriented polyester multifilament yarn (a) by at least 80%, and which is not dyeable with ionic dyes, and an undrawn polyester multifilament yarn (c) which has a breaking elongation of at least 250%, said breaking elongation being higher than that of said partially oriented polyester multifilament yarn (a) by at least 80%, and which is dyeable with ionic dyes;

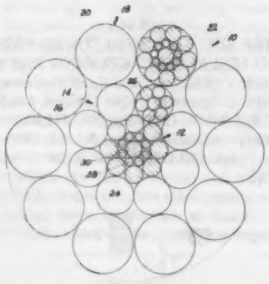
subjecting said three multifilament yarns (a), (b) and (c) to an interlacing treatment by means of a turbulent fluid flow in order to mix them; and

simultaneously drawing and frictionally false twisting the mixed multifilament yarns (a), (b) and (c) at a draw ratio of at least 1.2.

4,365,467
ROTATION RESISTANT WIRE ROPE

Donald L. Pellow, Lee's Summit, Mo., assignor to Armco Inc., Middletown, Ohio

Filed Dec. 12, 1980, Ser. No. 215,612
Int. Cl.[3] D07B *1/00, 5/00*
U.S. Cl. 57—214 14 Claims

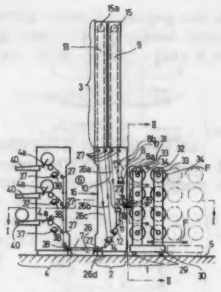


1. A rotation resistant rope comprising a central multi-wire heart strand, of Seale's construction, having a central wire, an inner layer and an outer layer, an intermediate layer comprising a plurality of multi-wire strands closed in one operation around said central strand to form an independent wire rope core, the number of wires of both said inner and outer layers of said central multi-wire heart strand corresponding in number to the strands in said intermediate layer, and a covering layer of 10 multi-wire strands closed around said intermediate layer, each intermediate layer and covering layer of strands having a direction of lay opposite to that of the other layer of strands, whereby said rope provides improved torque balancing characteristics to provide resistance to spinning of the rope under load, improved crushing resistance to drum winding or external factors and high strength.

4,365,468
FALSE TWIST MACHINE

Hans Schellenberg, Winterthur; Eduard Schenkel; Andreas Schwander, both of Seuzach, and Dieter Thalmann, Winterthur, all of Switzerland, assignors to Rieter Machine Works, Ltd., Winterthur, Switzerland

Division of Ser. No. 109,663, Jan. 4, 1980, Pat. No. 4,291,529, which is a division of Ser. No. 935,110, Aug. 21, 1978, Pat. No. 4,201,036. This application Jan. 28, 1981, Ser. No. 229,107
Claims priority, application Switzerland, Mar. 1, 1978, 2195/78
Int. Cl.[3] D02G *1/02;* D01H *13/28;* B65H *49/02*
U.S. Cl. 57—291 6 Claims



1. In a false twist machine, the combination of bobbin creel comprising a movable base for movement back and forth in a given direction, a first pluraity of bobbin holders mounted on said base at respective different heights above said base, a second plurality of bobbin holders mounted on said base at respective different heights above said base and spaced from said first plurality of bobbin holders in said given direction, a plurality of means for continuously taking off a thread from a pair of bobbins, each said means being associated with a respective one of said bobbin holders of said first plurality of bobbin holders and a respective one of said bobbin holders of said second plurality of bobbin holders for continuously taking off a thread from a pair of bobbins carried in use on said associated bobbin holders, and a plurality of thread transfer means corresponding with said plurality of thread take-off means and mounted on said base at a location spaced from both said pluralities of bobbin holders in said given direction, said plurality of thread transfer means being disposed at midheight of the creel; and

a texturizing station having an operating side comprising a first supply device for taking in a thread from said thread transfer means, a first heat treatment zone located above said supply device to receive a thread therefrom, a cooling zone below said heat treatment zone for the thread, a false twist device below said cooling zone for imparting a false twist to the thread, a second supply device for taking up the thread below said false twist device, a second heat treatment zone adjacent said first heat treatment zone to receive the thread from said second supply device, and a third supply device below said second supply device for taking up the thread from said second heat treatment zone wherein said first supply device, said false twist device, said second and said third supply devices are mutually offset from the top down and toward said operating side.

4,365,469

SZ TWISTING DEVICE FOR TWISTING ELEMENTS OF ELECTRIC CABLES

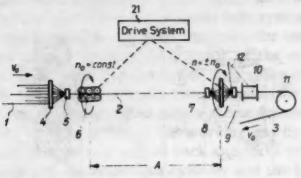
Dieter Vogelsberg, Coburg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Apr. 9, 1981, Ser. No. 252,451

Claims priority, application Fed. Rep. of Germany, Apr. 9, 1980, 3013933

Int. Cl.³ H01B 13/04

U.S. Cl. 57—293 3 Claims



1. In a device for the SZ twisting of twisting elements of electric cables, comprising: a first twisting closer; an immediately following rotating twisting head; a twisting plate arranged at a greater distance from the twisting head, said twisting plate provided with guide holes for the twisting elements; means to rotate said twisting head and to rotate said twisting plate with a changing direction of rotation; and at least one following twisting closer, the improvement comprising:

(a) the means to rotate adapted to always rotate the twisting head with the same direction of rotation, and a speed of rotation equal or approximately equal to the speed of rotation of the twisting plate; and

(b) the guide holes of the twisting plate being arranged on at least two pitch circles which are concentric with each other.

4,365,470

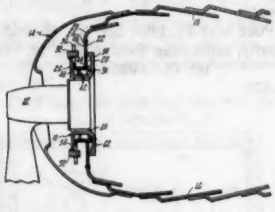
FUEL NOZZLE GUIDE AND SEAL FOR A GAS TURBINE ENGINE

John A. Matthews, Melrose; David A. Washburn, South Glastonbury, and Vito J. Sarli, Manchester, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Apr. 2, 1980, Ser. No. 136,655

Int. Cl.³ F23R 3/10; F02C 7/18

U.S. Cl. 60—39.32 3 Claims



1. In combination, an annular combustor for a gas turbine engine having a cylindrical inner liner wall and a concentrically disposed outer liner wall between which combustion ensues, a dome-like element attaching the inner and outer liner at the forward end and closing off said end, a plurality of fuel nozzle guide and seal elements supported in a corresponding number of holes circumferentially disposed in said dome-like element, a generally annular shaped bulkhead U-shaped in cross section circumscribing said holes and having a flange, said fuel nozzle guide and seal element having a sleeve member extending through a central opening of said bulkhead supporting the fuel nozzle intended to supply fuel to the combustor and a forward extending flange abutting the forward face of the flange of said bulkhead, a ring element disposed parallel to, but spaced from said bulkhead mounted in situ to the end of said sleeve remote from said flange thereof, nestling said bulkhead, clip means rigidly supported to the forward face of said flange of said sleeve slidably supported to said flange of said bulkhead for radial and circumferential movement of said fuel nozzle guide and seal element, slots formed in said sleeve adjacent said fuel nozzle for conducting air from outside said combustor to circumscribe said fuel nozzle inside said combustor to prevent flameholding and means for cooling said ring element, the bottom of said U of said bulkhead being spaced from said sleeve, and said ring being spaced from said bulkhead defining a gap, openings in said bulkhead for leading cool air outside said combustor through said gap to impinge on said ring and form a film in said gap discharging into said combustor.

4,365,471

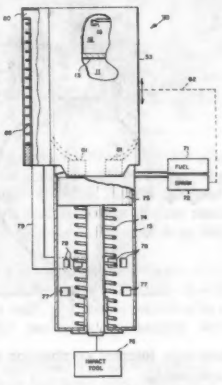
COMPRESSION WAVE FORMER

Joseph S. Adams, 7509 Vivian Dr., Vancouver, British Columbia, Canada

Filed Nov. 5, 1979, Ser. No. 91,150

Int. Cl.³ F02C 5/02

U.S. Cl. 60—39.76 14 Claims



1. A compression wave former comprising:

a. a detonation chamber having an ignition region at one end, an output region at an opposite end, and a fuel detonation region between said ignition region and said output region;

b. an ignition chamber smaller than said detonation chamber and arranged adjacent said one end of said detonation chamber;

c. an ignition control wall separating said ignition and detonation chambers;

d. said output region of said detonation chamber being formed with a constricted output opening having a smaller cross-sectional area than said detonation chamber;

e. means for charging said ignition chamber and said detonation chamber with a mixture of air and fuel;

f. an igniter in said ignition chamber for igniting said mixture in said ignition chamber; and

g. a peripheral region of said control wall having a plurality of through openings arranged so that a rapid increase in temperature and pressure that occurs soon after ignition in said ignition chamber simultaneously injects a plurality of hot gas jets through said openings of said control wall and into said ignition region of said detonation chamber, said hot gas jets being directed by said control wall openings along a peripheral region of said detonation chamber toward said output region of said detonation chamber to simultaneously initiate in said detonation chamber a burning of said mixture that

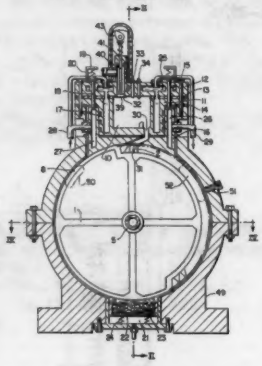
accelerates towards said output region and inward from said peripheral region for dynamically compressing said mixture in said detonation region to detonate said dynamically compressed mixture and form a compression wave directed out of said output opening.

4,365,472

TURBINE-TYPE INTERNAL-COMBUSTION ENGINE

Saburo Ogata, 2-11, Shonai Higashimachi 4-chome, Toyonakashi, Osaka 560, Japan

PCT No. PCT/JP78/00015, § 371 Date Jun. 25, 1980, § 102(e) Date Jun. 25, 1980, PCT Pub. No. WO80/00990, PCT Pub. Date May 15, 1980
PCT Filed Oct. 31, 1978, Ser. No. 198,954
Int. Cl.³ F02C 5/00
U.S. Cl. 60—39.76 7 Claims



1. A turbine-type internal combustion engine housed in a casing and comprising:

a rotary wheel having a circumference and a first row of blades arranged along a portion of said circumference and a circular arc surface formed on a remaining portion of said circumference, said rotary wheel having approximately the same radius as an inner surface of said casing;

a combustion chamber disposed above said casing having a discharge nozzle opening approximately tangentially to said rotary wheel;

a fuel supply means and an ignition means disposed in said combustion chamber;

said combustion chamber being in communication with a compressed air duct through a valve;

said casing being formed with exhaust ports positioned ahead of the orifice of the discharge nozzle with respect to a direction of advance of said rotary wheel;

an air inlet for introducing fresh air to said blade row;

exhaust openings positioned ahead of said exhaust ports with respect to said direction of advance of said rotary wheel;

at least one additional row of blades on said rotary wheel arranged parallel to said first row of blades; and

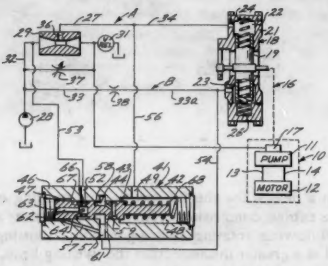
guide blades interposed between said first row of blades and said at least one additional row of blades and fixed to said casing, said guide blades being operable for changing the direction of flow of exhaust gas from said first row of blades to guide said exhaust gas to said at least one additional row of blades.

4,365,473

HYDROSTATIC TRANSMISSION HAVING AN OVERSPEED CONTROL

Lawrence F. Schexnayder, and William J. Spivey, Jr., both of Joliet, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/01096, § 371 Date Aug. 20, 1980, § 102(e) Date Aug. 20, 1980, PCT Pub. No. WO82/00617, PCT Pub. Date Mar. 4, 1982
PCT Filed Aug. 20, 1980, Ser. No. 251,522
Int. Cl.³ F15B 7/00
U.S. Cl. 60—447 15 Claims



1. In a hydrostatic transmission (10) having a variable displacement pump (11) driven by an engine, signal means (27) for controllably delivering low and high pressure signals (A,B) with the pressure differential between the low and high pressure signals being increased in response to an increase in the engine speed and decreased in response to a decrease in the engine speed, and control means (16) for receiving the low and high pressure signals and reducing the pump displacement in response to said pressure differential between the low and high pressure signals dropping below a predetermined magnitude, the improvement comprising:

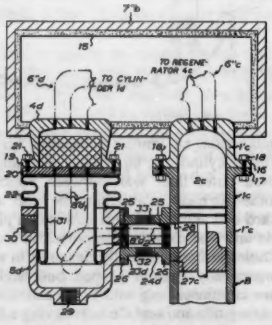
overspeed control valve means (41) for decreasing the pressure level of the high pressure signal (B) received by the control means (16) in response to the pressure differential between the low and high pressure signals (A,B) exceeding a second predetermined magnitude.

4,365,474

MODULE FOR CONSTRUCTING A DOUBLE-ACTING FOUR-CYLINDER STIRLING ENGINE

Stig G. Carlqvist, Malmö, Sweden, assignor to CMC Aktiebolag, Malmö, Sweden

Filed May 21, 1980, Ser. No. 151,863
Claims priority, application Sweden, Jun. 19, 1979, 7905378
Int. Cl.³ F02G 1/04
U.S. Cl. 60—525 6 Claims



1. Module for the construction of a double-acting four-cylin-

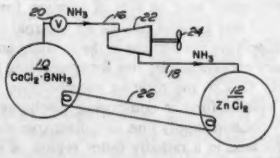
der Stirling engine which has a heater means (*7'a, 7'b; 7''a, 7''b*) for heating the working gas of the engine; an engine block (B) in which the four cylinders (*1a–1d*) of the engine are fixedly anchored; a piston (*2a–2d*) arranged in each cylinder and dividing the interior of the respective cylinder into an upper hot space and a lower cold space; a regenerator/cooler unit (*3a–3d*) associated with each cylinder and comprising an upper regenerator (*4a–4d*) and a lower cooler (*5a–5d*) which is connected to the regenerator; a heater tube system (*6'a–6'd; 6''a–6''d*) associated with each cylinder and extending from the upper hot space of the respective cylinder through the heater means and into the regenerator of the regenerator/cooler unit associated with the cylinder; and a cooler tube system (*8'a–8'd; 8''a–8''d*) associated with the regenerator/cooler unit of each cylinder and extending from the interior of the regenerator through the cooler and into the lower cold space of the next cylinder, the cylinders, the heater tube systems, the regenerator/cooler units and the cooler tube systems forming a completely closed system in which the working gas by means of the pistons is continuously moved back and forth between the upper hot space of the respective cylinder and the lower cold space of the next cylinder, characterized by a heater module (*7'a, 7'b; 7''a, 7''b*) which constitutes one of two separate heater units forming the heater means of the Stirling engine; two upper cylinder portions (*1'a–1'd*) which extend into the heater module, are sealingly and fixedly connected thereto and each adapted to be rigidly connected to a lower cylinder portion (*1''a–1''d*) fixedly anchored to the engine block (B) to form two of the four cylinders (*1a–1d*) of the engine; regenerator/cooler units (*3a–3d*) associated with each of said cylinders and the regenerators (*4a–4d*) of which extend into the heater module, are sealingly and fixedly connected thereto and flexibly connected to the respective cooler (*5a–5d*) and the coolers of which are adapted to be fixedly connected each to a lower cylinder portion (*1''a–1''d*) fixedly anchored to the engine block, to connect the respective cooler tube system (*8'a–8'd; 8''a–8''d*) thereto; heater tube systems (*6'a–6'd; 6''a–6''d*) associated with each of said cylinders and located in the heater module and connecting said upper cylinder portions to the respective regenerator; and a plurality of flexible first cooler tubes ($8'a_1$–$8'd_1$; $8''a_1$–$8''d_1$), included in the respective cooler tube system, in each of said to regenerator/cooler units, said cooler tubes being fixedly connected to the respective regenerator, extending from the interior of the regenerator to the respective cooler, said cooler having a wall through which the cooler tubes extend and to which the cooler tubes are fixedly connected.

4,365,475

THERMOCHEMICAL ENERGY STORAGE AND MECHANICAL ENERGY CONVERTER SYSTEM

Richard M. Dunlap, Middletown, R.I., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 29, 1980, Ser. No. 182,366
Int. Cl.³ F01K *25/10*
U.S. Cl. 60—673 **2 Claims**



1. A thermochemical energy storage and mechanical energy converter system comprising:

first means for forming ammoniated calcium chloride with the release of ammonia gas;

second means for receiving ammonia gas from said first means and expending said ammonia gas to provide work;

third means for receiving ammonia gas from said second means and forming ammoniated zinc chloride;

fourth means for transferring heat from said second means to said first means; and

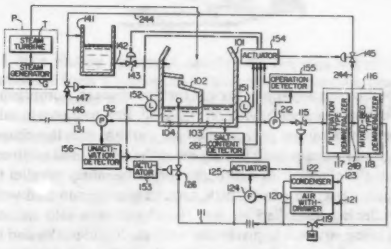
fifth means for releasing ammonia gas from said ammoniated zinc chloride and reforming ammoniated calcium chloride.

4,365,476

CONDENSATION SYSTEM FOR POWER PLANT

Toyohiko Masuda; Takeshi Ueno; Yoji Nagai; Hitoshi Ishimaru, all of Hitachi, and Shozo Nakamura, Hitachiota, all of Japan, assignors to Hitachi Ltd. and Hitachi Engineering Co. Ltd., both of Tokyo, Japan

Filed Oct. 22, 1980, Ser. No. 199,667
Claims priority, application Japan, Oct. 23, 1979, 54-135967
Int. Cl.³ F22D *5/00*
U.S. Cl. 60—686 **18 Claims**



1. A condensation system for use in a power plant including a steam generator and a steam turbine, comprising;

a side stream condenser defining therein first and second hot wells, said first hot well receiving therein condensate produced by condensing steam exhausted from said steam turbine;

a condensate purficiation system including a condensate feed line through which condensate is fed from said first hot well to said second hot well, and means provided in said condensate feed line for purifying condensate flowing therethrough;

a main feed system including a main condensate line through which condensate is fed from said second hot well to said steam generator;

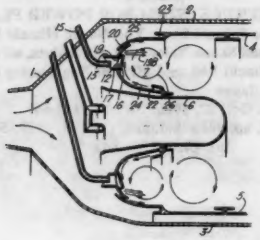
a supplementary feed system including a condensate tank, a supplementary feed line having one end thereof connected to said tank and the other end connected to said first hot well, a supplementary feed valve provided in said supplementary feed line for controlling flow rate of condensate from said tank to said first hot well, a first spill-over line having one end thereof connected to said tank and the other end connected to said condensate feed line, a first spill-over valve provided in said first spill-over line for controlling flow rate of condensate from said condensate feed line to said tank, a second spill-over line having one end thereof connected to said tank and the other end connected to said main condensate feed line, and a second spill-over valve provided in said second spill-over line for controlling flow rate of condensate from said main condensate feed line to said tank; and

a control system including level detecting means for detecting level of condensate in said first hot well to produce a signal, and actuating means operative in response to the signal from said level detecting means to actuate said supplementary feed valve and said first and second spill-over valves so as to regulate the opening degree of said supplementary feed valve, so as to open one of said first and second spill-over valves to regulate the opening degree thereof, and so as to close the other spill-over valve.

4,365,477
COMBUSTION APPARATUS FOR GAS TURBINE ENGINES

Donald E. Pearce, Bristol, England, assignor to Rolls-Royce Limited, London, England

Filed May 16, 1980, Ser. No. 150,366
Claims priority, application United Kingdom, May 18, 1979, 7917335
Int. Cl.³ F23R 3/30, 3/50
U.S. Cl. 60—737 9 Claims



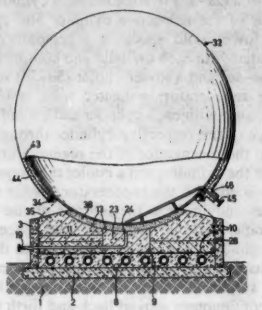
1. Combustion apparatus for gas turbine engines, comprising a combustion chamber having an end wall, first passages in said wall for introducing a primary fuel-air mixture into the chamber, the first passages each having an outlet positioned to direct flow into the chamber in a direction predominantly parallel to the adjacent portion of said wall, second passages in said wall for introducing unfuelled air into the chamber, a said second passage being situated in proximity with each said outlet and in a position to direct air flow across the flow of primary mixture from the outlet so that the flows from adjacent said first and second passages combine to produce a flow of secondary mixture whose direction has a component away from said end wall of the chamber, each said first passage having a wall facing the inside of said chamber, inlets positioned to generate a cooling film along the inside of said end wall and arranged to direct said cooling film over at least the greater part of respective said walls of said first passages.

4,365,478
SUPPORT FOR A SPHERICAL TANK

Heinrich Störi, Winterthur, Switzerland, and Walter Averdiek, Georgsmarienhütte, Fed. Rep. of Germany, assignors to Sulzer Brothers Limited, Winterthur, Switzerland and Klockner-Werke AG, Duisburg, Fed. Rep. of Germany

Filed Aug. 24, 1979, Ser. No. 69,504
Claims priority, application Fed. Rep. of Germany, Aug. 24, 1978, 2837007; Switzerland, Oct. 26, 1978, 11067/78
Int. Cl.³ F17C 1/12
U.S. Cl. 62—45 15 Claims

1. A support for a spherical tank comprising
a foundation slab;
an outer vertically disposed boundary ring mounted on said slab to define a peripherally enclosed space;
a filling of insulating concrete in said space, said filling having an upper spherical surface; and

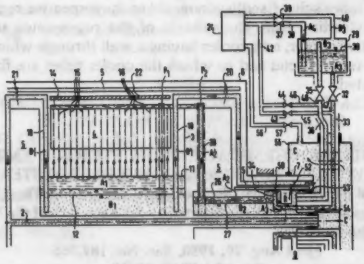


a layer of sand of essentially uniform thickness on said spherical surface of said filling to receive a spherical tank thereon.

4,365,479
COOLANT REPLENISHING SYSTEM FOR SUPERCONDUCTING FIELD WINDINGS

Erich Weghaupt, Mülheim; Lutz Intichar, and Christoph Schnapper, both of Erlangen, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Nov. 4, 1980, Ser. No. 203,967
Claims priority, application Fed. Rep. of Germany, Nov. 26, 1979, 2947592
Int. Cl.³ F17C 7/02
U.S. Cl. 62—55 9 Claims



1. A coolant replenishing system for a superconducting field winding in the rotor of an electric machine, the machine being of the type which has a coolant feed system which contains a rotating antechamber near an axis of rotation for containing coolant in liquid and gaseous phases, an external coolant supply tank for supplying the coolant to the rotating antechamber, and a stationary coolant supply line for connecting the external coolant supply tank to the rotating antechamber, the coolant replenishing system further comprising discharge means for the stationary coolant supply line, said discharge means having an opening located in a radially outer region of the rotating antechamber and at a predetermined radius from the axis of rotation such that an input pressure at said opening of said discharge means is in equilibrium with a pressure of the liquid coolant in the rotating antechamber during normal operation of the machine.

4,365,480

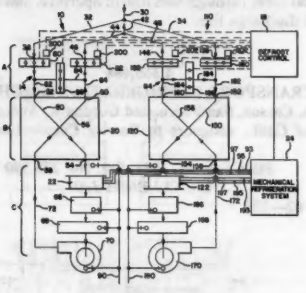
PROCESS GAS TREATING APPARATUS

William J. Darm, Tigard, Oreg., assignor to United Air Specialists, Inc., Cincinnati, Ohio

Continuation-in-part of Ser. No. 152,887, Jun. 3, 1980, which is a continuation-in-part of Ser. No. 53,819, Jul. 2, 1979, which is a continuation-in-part of Ser. No. 939,334, Sep. 5, 1978, which is a continuation-in-part of Ser. No. 567,258, Apr. 11, 1975, Pat. No. 4,140,175. This application Aug. 11, 1980, Ser. No. 177,228

Int. Cl.³ F25D 21/12, 17/00

U.S. Cl. 62—82 15 Claims



1. A process exhaust gas treating apparatus for condensing water vapor and vaporized solvent from the process exhaust gas comprising:

at least two condenser assemblies connected in parallel, each of said assemblies including means defining a gas flow path having an upstream inlet and a downstream outlet, water vapor condenser means in said gas flow path, solvent vapor condenser means in said gas flow path downstream of said water vapor condenser means, means defining a defrost gas flow passageway which communicates between a first location in said gas flow path upstream of said water vapor condenser means and a second location in said gas flow path downstream of said solvent vapor condenser means, and defrost control means for selectively shifting each condenser assembly between a condensing mode and a defrost mode so that when the condenser assembly is in the condensing mode the inlet and outlet of the gas flow path are open to permit the flow of process exhaust gas through the gas flow path, the water vapor condenser means condenses water vapor to a liquid from process exhaust gas flowing in the gas flow path, and said defrost gas flow passageway is closed, and so that when the condenser assembly is in the defrost mode said inlet is closed and prevents the passage of process exhaust gas therethrough and said defrost gas flow passageway is open to provide a recirculating defrost gas flow loop which includes the defrost gas flow passageway and that portion of the gas flow path from the first location downstream to the second location, said defrost control means comprising means for shifting one of said assemblies into said condensing mode while another of said assemblies is in the defrost mode and for shifting said one of said assemblies into said defrost mode while another of said assemblies is in the condensing mode, and means for removing said condensed water and solvent from said water and solvent condensing means, respectively.

4,365,481

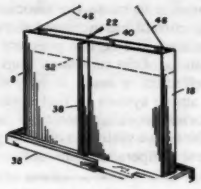
METHOD AND APPARATUS FOR REMOVAL OF SODIUM CARBONATE FROM CYANIDE PLATING BATHS

Fred Pearlstein, Philadelphia, Pa., and Carroll F. Evans, Cinnaminson, N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Division of Ser. No. 84,964, Oct. 15, 1979, Pat. No. 4,278,515. This application Oct. 14, 1980, Ser. No. 196,957

Int. Cl.³ B01D 9/04; C02F 1/22

U.S. Cl. 62—123 7 Claims



1. In a plating apparatus suitable for the removal of sodium carbonate from a plating bath solution, the combination of:

a tank means for containing a plating solution comprising sodium carbonate,

a container body means adapted to be immersed in said solution and to cause the sodium carbonate to precipitate on the cold exterior surface thereof, said container body means being loaded with a cooling liquid comprising dry ice and containing an open top loading said cooling liquid comprising dry ice into said container body means,

means for maintaining said container body means in an upright position in said plating solution, and

means affixed to said container body means for lifting said container body means into and out of said plating solution.

4,365,482

DEVICE AT HEATING OR COOLING UNIT

Sixten Langgard, Box 75, 736 00 Kungsör, and Lennart Larsson, Agnevägen 9, 633 47 Eskilstuna, both of Sweden

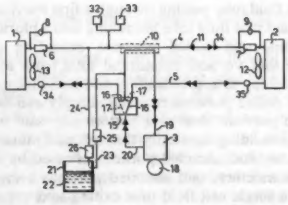
PCT No. PCT/SE79/00174, § 371 Date Apr. 24, 1980, § 102(e) Date Apr. 24, 1980, PCT Pub. No. WO80/00491, PCT Pub. Date Mar. 20, 1980

PCT Filed Aug. 17, 1979, Ser. No. 195,607

Claims priority, application Sweden, Aug. 24, 1978, 7808937

Int. Cl.³ F25B 45/00

U.S. Cl. 62—149 2 Claims



1. A device in a heating or cooling system, such as, a heat pump, wherein the energy carrier is a substance, the volume of which varies substantially with the temperature, for example freon, which system constitutes a closed total system comprising: an active system portion of said closed system including a compressor, a condenser, an expansion valve, a subsequent evaporator and appropriate conduits for advancing said substance in said active system; a closed tank, connected to said active system portion, for containing said substance, said tank being connected respectively to the suction side and pressure side of the compressor by two respective conduits, each of which is provided with an electrically controlled valve for

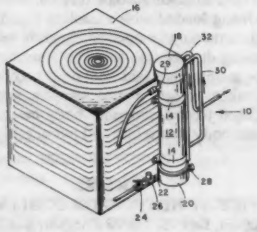
closing and opening the conduit in question, wherein the compressor is driven by an electric motor and wherein a control circuit is provided to sense the load of the motor, characterized in that: said control circuit is adapted in a way known per se, to sense the working current in one or several phases and, in response to said working current, is adapted to transmit a signal to that said valve which is located on the suction side of the compressor to cause said valve to open when the working current has dropped below a predetermined value related to a certain pressure in the system whereby filling of the substance into the active system from said tank is effected, and is adapted to transmit a signal to that said valve located on the pressure side of the compressor to cause the associated valve to open when the working current has increased above a certain predetermined value related to a certain pressure in the active system whereby draining of the substance from the active system into said tank is effected, in order to vary the amount of said substance in the active system so that a predetermined pressure, as well as normal working conditions for the compressor, is maintained in the active system to obtain a good efficiency of the unit at different temperatures thereof.

4,365,483

VERTICAL CONVECTION HEAT DISSIPATION TOWER

Larry W. Binger, P.O. Box 32511, San Antonio, Tex. 78216

Filed Jul. 1, 1981, Ser. No. 279,339
Int. Cl.³ F25B *39/04*
U.S. Cl. 62—183 **6 Claims**



6. A convection heat dissipater comprising:

a. a vertical cylindrical tube having a top end and a bottom end;

b. a top cap connected to said top end of said vertical cylindrical tube;

c. a bottom cap connected to said bottom end of said vertical cylindrical tube;

d. a first fluid tube passing through a first aperture in said top cap, said first fluid tube branching into a plurality of coiled portions, said coiled portions extending downwardly inside said vertical cylindrical tube from approximately said top cap to approximately said bottom cap, said plurality of coiled portions bending sharply and becoming uncoiled portions near said bottom cap, said uncoiled portions extending upwardly through said plurality of coiled portions, said uncoiled portions encased by an insulating sleeve member, said uncoiled portions being coupled to form a single exit fluid tube exiting said vertical cylindrical tube through a second aperture in said top cap;

e. a second fluid tube connected to a third aperture in said bottom cap and in fluid communication with said vertical cylindrical housing, said second fluid tube being tangentially connected to said bottom cap, said second fluid tube having a flow adjustment valve and an automatic flow control valve located along said second fluid tube immediately prior to said third aperture, said automatic control valve being adapted to open when energized by a voltage being applied thereto;

f. a discharge line threaded into a fourth aperture located near said top end of said vertical cylindrical tube;

g. a plurality of semi-rigid, generally horizontal discs equally spaced within and along the entire height of said vertical cylindrical tube, each of said discs having a split extending from the outer circumference of said disc to an inner bore in the center of said disc, each of said discs further having a multiplicity of bores spaced along the circumferential edge of said disc, said inner bore sized to enable said plurality of uncoiled portions of said first fluid tube and said insulating sleeve member to pass through said inner bore;

h. a drain plug threaded into a fifth aperture at the lowest point of said bottom cap; and

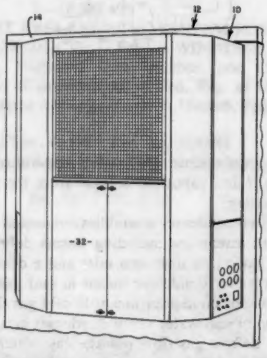
i. said convection heat dissipater being adapted to receive a refrigerant fluid from a condenser of an air conditioning system through said first fluid tube, a coolant fluid flowing in through said second fluid tube, into said vertical cylindrical tube, through said fourth aperture, and out through said discharge line.

4,365,484

TRANSPORT REFRIGERATION MACHINE

Ernest A. Carson, San Pedro, and Gordon K. Anderson, Tustin, both of Calif., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Feb. 24, 1981, Ser. No. 238,390
Int. Cl.³ B60H *3/04*
U.S. Cl. 62—239 **7 Claims**



1. A transport refrigeration machine for conditioning the interior of a trailer, comprising:

a frame for connecting the machine to the trailer;

a refrigerant compressor supported by the frame;

a condenser assembly supported by the frame and located in an upper front portion of the refrigeration machine;

an evaporator assembly located in an upper rear portion of the refrigeration machine, and including

a housing secured to and supported by the frame,

an evaporator heat exchanger extending within the housing for conducting a refrigerant fluid therethrough, and including first and second end plates,

heat exchanger support means connecting the evaporator heat exchanger to the frame to support the evaporator heat exchanger independently of the housing, and including first and second side channel members secured to the frame and projecting rearward of the housing, means securing the end plates of the evaporator heat exchanger to the first and second side channel members, and buttress members secured to and projecting forward from the side channel members, and extending directly below and in contact with the end plates to further support the evaporator heat exchanger,

a blower unit extending within the housing and including an evaporator fan to circulate air through the housing in heat

transfer relation with refrigerant conducted through the evaporator heat exchanger, and

blower unit support means connecting the blower unit to the frame to support the blower unit independently of the housing;

a fan shaft rotatably supported by the frame for driving the evaporator fan; and

power means to drive the compressor and the fan shaft.

4,365,485

ARRANGEMENT IN AN ICE MACHINE

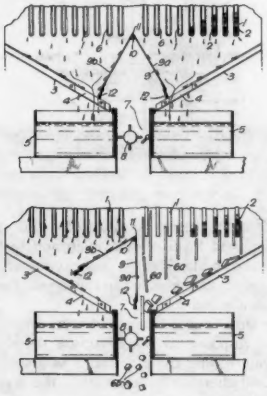
Per Samuelsen, Grimstad, Norway, assignor to A/S Finsam International, Inc., N-Oslo, Norway

Filed Sep. 23, 1981, Ser. No. 304,956

Claims priority, application Norway, Oct. 1, 1980, 802900

Int. Cl.³ F25C *1/12*

U.S. Cl. 62—320 **8 Claims**



1. Arrangement in an ice machine comprising a plurality of substantially parallel vertically arranged ice freezing elements **(1)** which during the ice freezing phase are supplied with water, and which are provided with conduits **(2)** for transport of freezing medium or thawing medium, as well as vessels **(5)** arranged below the ice freezing elements and adapted for collecting surplus water, and an ice crusher box **(7)** for crushing and delivery of finished produced ice **(6*b*)**, characterized in that between the bottom of the ice freezing elements **(1)** and the water collecting vessels **(5)** and the ice crusher box **(7)** there is provided a pivotable baffle means **(9)** which during the ice freezing phase (FIG. **1**) adopts an inclined position covering the ice crusher box **(7)** and conducting surplus water to the water collecting vessels **(5)** via a stationarily arranged inclined guiding plate **(3)** having a water escaping field **(4)**, and which during the harvesting phase (FIG. **2**) when the water supply is shut off can swing to an approximately vertical position under the weight of the ice crop **(6*a*)** and enable the ice flakes **(6*a*)** to be passed to the ice crusher box **(7)**, the pivotable baffle means **(9)** subsequent to the finished harvesting phase retaining its inclined position covering the ice crusher box.

4,365,486

WATER-COOLED HEAT-ACCUMULATING TYPE DRINK COOLING SYSTEM

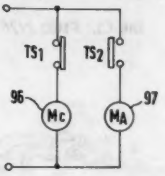
Masao Iwanami, Suzuka, and Yusuke Ogawa, Yokkaichi, both of Japan, assignors to Fuji Electric Co., Ltd., Japan

Filed Jun. 29, 1981, Ser. No. 278,857

Int. Cl.³ B67D *5/62*

U.S. Cl. 62—392 **7 Claims**

1. In a water-cooled heat-accumulating type drink cooling system having a water tank filled with water and a cooler disposed therein, a drink cooling coil formed at an intermediate portion of a drink supply pipeline, and an electric water agitator, said cooler being operated to cool the water in said tank to form an ice bank around the cooler and accumulate heat in the ice bank, a drink flowing through said drink cooling coil being cooled with the cooling water in said tank, the improvement therein comprising:



an agitator stopping means for sensing, while said cooler is operated to cool the water in said tank and form an ice bank around the cooler, a decrease in the temperature of the water in said tank to a level higher than and in the neighborhood of its freezing point, and for stopping said agitator in response thereto.

4,365,487

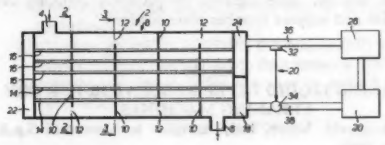
REFRIGERATION APPARATUS

William E. Dobney, Camberwell, Australia, assignor to Luke Limited, Mitcham, Australia

Continuation of Ser. No. 118,885, Feb. 6, 1980, abandoned. This application Apr. 2, 1981, Ser. No. 250,321

Int. Cl.³ F25B *1/00*

U.S. Cl. 62—498 **17 Claims**



1. Refrigeration apparatus for cooling a fluid, said apparatus comprising:

a heat exchanger having a shell, tubes for flow of refrigerant through the shell from a refrigerant inlet to a refrigerant outlet, baffle means for the shell for defining a tortuous flow path for said fluid through the shell, said tubes which lead to the refrigerant outlet being located only in those regions of the shell where the flow path of said liquid has substantial components of velocity in a direction transverse to the tubes;

a condenser for supplying liquid refrigerant to said refrigerant inlet;

a compressor for receiving evaporated refrigerant from said refrigerant outlet and for supplying compressed refrigerant to said condensor;

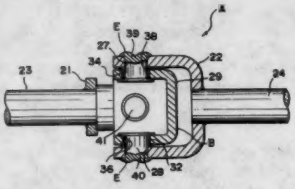
valve means for controlling the flow of refrigerant; and

sensing means for sensing the state of refrigerant at said refrigerant outlet and being operable to control said valve means so as to reduce flow of refrigerant if a liquid refrigerant or conditions indicative thereof are sensed at said outlet.

4,365,488
UNIVERSAL JOINT

Haruo Mochida; Yoshiyuki Tanaka, both of Yokohama; Yoshio Yamamoto, Kosai, and Minoru Kataoka, Shizuoka, all of Japan, assignors to Nissan Motor Co., Ltd. and Fuji Kiko Company, Limited, both of, Japan

Filed Apr. 30, 1980, Ser. No. 145,154
Claims priority, application Japan, May 11, 1979, 54-63193[U]
Int. Cl.³ F16D 3/26
U.S. Cl. 464—132 5 Claims



1. A universal joint, comprising:

first and second yokes, each having two side sections, each of said side sections having a hole therein;

a hollow rectangular parallelepiped support member positioned between the side sections of said first and second yokes, said support member having five rectangular plate sections, four of said rectangular plate sections including respective holes, each of said four rectangular plate sections being integrally connected to adjacent plate sections at adjoining edges thereof;

four bushings, one each being disposed in a respective hole of said support member, each of said bushings being formed with a cylindrical opening therethrough and an annular flange section at one end thereof, said flange sections being located between the rectangular plate sections of said support member and the side sections of said yokes; and

pin means inserted into the respective holes of the side sections of said yokes and the bushings disposed in said support member plate sections for pivotally coupling said yokes and support member plate sections.

4,365,489
CLEANING LIQUID LEVEL REGULATOR FOR DRY CLEANING MACHINES

Gino Maestrelli, Milan, Italy, assignor to Maestrelli S.p.A., Milan, Italy

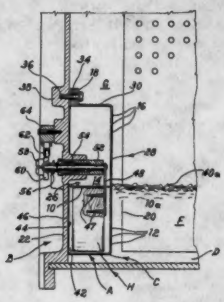
Filed Jan. 29, 1981, Ser. No. 229,675
Claims priority, application Italy, Feb. 18, 1980, 20816/80[U]
Int. Cl.³ D06F 43/02
U.S. Cl. 68—212 8 Claims

1. In a dry cleaning machine of the type including a cleaning chamber containing therein a liquid cleaning solvent having an upper surface, and a drum rotatable within said chamber and agitating said upper surface of said solvent therein, the improvement of means for regulating the level of said upper solvent surface, said level regulating means comprising:

a box-shaped body positioned entirely within said cleaning chamber and mounted on a wall of said machine, said box-shaped body defining therein a cavity;

said box-shaped body including inlet means for enabling passage of solvent from said chamber through said box-shaped body into said cavity, such that said solvent fills said cavity up to a level therein equal to said level of said upper solvent surface in said chamber, said inlet means comprising a first, lower plurality of openings in said box-shaped body at a level normally below said level of said solvent surface in said chamber, said first, lower plurality of openings being dimensioned to enable free flow of said solvent from said chamber to said cavity, but to prevent turbulence of said upper surface of said solvent in said chamber due to agitation by said drum from effecting the upper surface of said solvent in said cavity, such that said upper surface in said cavity is even and free of turbulence;

said box-shaped body including outlet means for enabling passage of air within said cavity above said solvent therein through said box-shaped body into said chamber, said outlet means comprising a second, upper plurality of openings in said box-shaped body at a level always above said level of said solvent surface in said chamber;



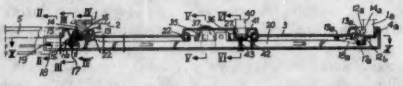
liquid level detecting means, positioned within said cavity, for detecting said level of said even and turbulent-free upper surface of said solvent in said cavity, whereby such detected level corresponds to the true level of said solvent in said chamber; and

means, operably connected to said level detecting means and operable in response to the detection thereby of level variations, for controlling the amount of said solvent within said chamber, and thereby for regulating the levels of said solvent in said chamber and said cavity.

4,365,490
LOCKING DEVICE FOR USE ON SUITCASES

Stephane Manzoni, 1, rue Pasteur, Saint Claude, France (39200)

Filed Mar. 31, 1980, Ser. No. 135,637
Claims priority, application France, Apr. 6, 1979, 79 08863
Int. Cl.³ E05B 65/52
U.S. Cl. 70—70 8 Claims



1. A locking device for use in suitcases, comprising:

a housing including two elements adapted to be assembled,

keepers in one of said elements, each keeper having a lateral notch and an outermost surface inclined to form a cam,

lock-staples in the other of said elements, each lock-staple adapted to engage a respective keeper therein, latch hooks, each pivotally mounted inside a respective one of said lock-staples and adapted to be engaged in a notch provided in a respective keeper,

elastic members, each associated with a latch hook for biasing the associated latch hook in said notch provided in said respective keeper,

an opening control bar axially slidably mounted within said housing and selectively engageable with said latch hooks, and

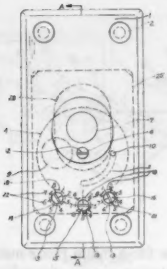
a locking bar axially slidably mounted within said housing and selectively engageable with said latch hooks.

4,365,491

GUARD PLATE

Edward Rubinstein, 3325 Neptune Ave., Brooklyn, N.Y. 11224, and Efim Rubinshtein, 2612 West St., Brooklyn, N.Y. 11223

Filed May 7, 1980, Ser. No. 147,623
Int. Cl.³ E05B 17/14, 37/12
U.S. Cl. 70—425 14 Claims



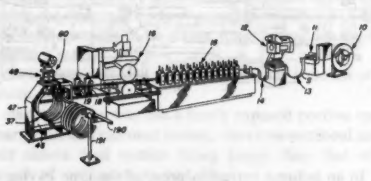
1. An improved guard plate for protecting a cylinder of a lock, comprising: a body attached to the door in the vicinity of the cylinder, said body having a first opening in alignment with said cylinder; a disc rotatably mounted on an inside surface of said body between said body and said door, said disc having an opening approximately equal in size to said first opening of said plate; means for rotating said disc positioned on a surface of said disc and being accessible through a second opening in said body; and at least one substantially round finger including a cutoff portion, rounded portions of each finger interacting with a respective groove made on the periphery of said disc to prevent rotation of said disc, rotation of each finger causing said rounded portions to move away from respective grooves and causing said cutoff portions to become aligned with said respective hollow grooves, thereby permitting rotation of said disc, and each finger being rotatably inserted in a respective third opening in said plate.

4,365,492

RING FORMER AND CUTOFF

William A. Kortan, and Donald A. Nebrig, both of Bay Village, Ohio, assignors to Intercole Bolling Corp., Cleveland, Ohio

Filed Jun. 25, 1980, Ser. No. 162,795
Int. Cl.³ B21F 11/00
U.S. Cl. 72—10 50 Claims



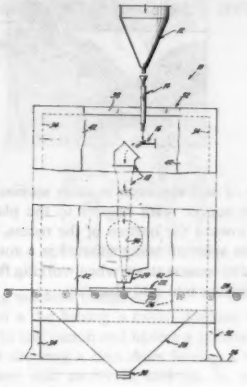
1. A ring forming machine comprising:
(a) forming meaans for continuously forming ring stock into a helix having a plurality of turns;
(b) drive means for feeding a free end of said helix through a stationary cutoff die;
(c) stop means for arresting motion of said helix free end, at least temporarily, to produce radial expansion in at least one turn of said helix;
(d) means for sensing expansion in said one turn including means for actuating said cutoff die to sever said one turn from the helix upon sensing a predetermined expanded condition of said one turn.

4,365,493

SHOT PEENING APPARATUS

Paul G. Feld, Los Angeles, and Richard M. Engel, Cypress, both of Calif., assignors to Metal Improvement Company, Inc., Paramus, N.J.

Filed Jun. 10, 1981, Ser. No. 272,337
Int. Cl.³ B21J 1/00; C21D 7/06
U.S. Cl. 72—53 14 Claims



1. A shot peening apparatus for shot peening the surface of the workpiece comprising
(a) guide duct means for receiving and conducting shot and having an upper inlet end portion and a lower outlet end portion;
(b) gravity feed means receiving shot from a source of supply thereof and for conveying and discharging shot by gravity;
(c) impact means interposed between the upper inlet end of said guide duct means and said gravity feed means which utilizes a portion of the kinetic energy of the shot discharging from the gravity feed means to effect substantially uniform distribution of the shot in the guide duct means; and
(d) a nozzle means for receiving the substantially uniformly distributed shot from the guide duct means at gravitational velocity and for directing the shot to impact against a workpiece.

4,365,494

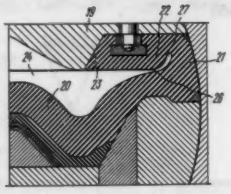
HYDRAULIC PRESS ELASTIC STAMPING TOOL

Arkady N. Kurovich, Tashkentsky pereulok, 5, korpus 3, kv. 67; Jury B. Krasnokutsky, Znamenskaya ulitsa, 38, korpus 1, kv. 201; Vyacheslav N. Sysoev, Khoroshevskoe shosse, 1, korpus 3, kv. 55; Lev D. Golman, Leninsky prospekt, 67, kv. 83, all of Moscow; Vladimir T. Zuev, ulitsa Marshala Birjuzova, 24, kv. 58, Odintsovo Moskovskoi oblasti; Viktor I. Nesterov, ulitsa Narodnogo opolchenia, 44, korpus 1, kv. 68, Moscow, and Viktor A. Laboda, ulitsa generala Vitruka, 21, kv. 23, Kiev, all of U.S.S.R.

Filed Sep. 30, 1980, Ser. No. 192,215
Int. Cl.³ B21D 22/12
U.S. Cl. 72—63 11 Claims

1. A hydraulic press elastic stamping tool comprising a tool body; a recess provided in said tool body; a projection provided on the bottom of said recess some distance from the walls thereof; a flat elastic diaphragm situated in said recess and provided around its perimeter with a flange facing toward the bottom of said recess, the end portion of the flange being parallel to the plane of the diaphragm and having a sealing edge which makes contact with said projection in the tool body recess, forming a hermetically sealed chamber;
ducts provided in said tool body for communicating said

chamber with a source of working fluid under pressure; said flat elastic diaphragm end portions forming in conjunction with the main body of the diaphragm an aperture closed at one end and dimensioned at least four times smaller than the thickness of the diaphragm, the peripheral part of said aperture, in cross section thereof, being smoothly curved with respect to the plane of the diaphragm toward the bottom of the recess, and the closed end of the aperture being situated in a zone which is not subjected to tension strain when working fluid is delivered under pressure into said chamber.



4,365,495

METHOD OF MAKING A MANDREL FOR A SELF PLUGGING BLIND RIVET

Albert C. Francis, Bennington, England, assignor to Aerpat A.G., Zug, Switzerland

Continuation of Ser. No. 57,355, Jul. 13, 1979, abandoned, which is a continuation of Ser. No. 869,282, Jan. 13, 1978, abandoned. This application Jun. 25, 1980, Ser. No. 162,935

Claims priority, application United Kingdom, Jan. 13, 1977, 1396/77

Int. Cl.³ B21K *1/58*; B21D *17/04*; B21H *3/06*

U.S. Cl. 72—88 **12 Claims**

1. A method of making a mandrel for a blind rivet, which method comprises first forming a blank having a generally cylindrical stem and a head, which head comprises a cylindrical core portion adjacent to and of substantially the same diameter as the stem, a boss spaced from the stem by the core portion and having a diameter greater than the core portion, and an end portion adjacent to the boss and having a diameter greater than the boss, and then rolling the boss downwardly toward the stem and over the core portion to form a skirt which peripherally surrounds the core portion and which has a greater diameter than the stem, forming a portion of said skirt into a shoulder extending transverse to the direction of the stem, and confining the material of said skirt so that said skirt surrounds only said core portion.

4,365,496

ROLLING PROCESS

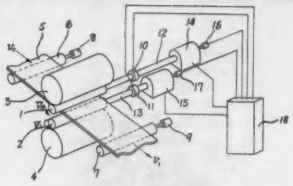
Hiroyuki Shiozaki, Yokosuka; Masao Mikami, Fujisawa; Isao Imai, and Toshio Iwanami, both of Yokohama, all of Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 24, 1978, Ser. No. 880,931

Claims priority, application Japan, Mar. 1, 1977, 52-22033

Int. Cl.³ B21B *35/00*

U.S. Cl. 72—249 **1 Claim**



1. A rolling process for a metal piece maintaining a peripheral velocity ratio between a pair of working rolls as high as possible but below a thickness ratio between the metal piece entering the working rolls and the same metal piece leaving the working rolls, whereby the rolling torque may be within a maximum tolerable torque.

4,365,497

INTERMEDIATE FRAME TYPE INDIRECT EXTRUSION PRESS

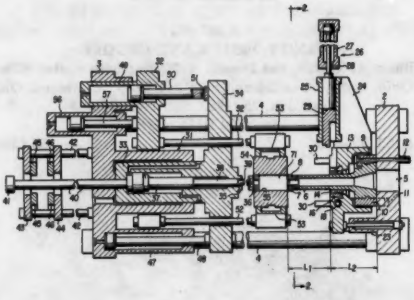
Akira Asari, Osaka, Japan, assignor to Kobe Steel, Ltd., Kobe, Japan

Filed Sep. 27, 1978, Ser. No. 946,330

Claims priority, application Japan, Oct. 7, 1977, 52/122663; Oct. 7, 1977, 52/122664; Oct. 7, 1977, 52/122665; Oct. 7, 1977, 52/122666

Int. Cl.³ B21C *27/00, 33/00, 35/04*

U.S. Cl. 72—255 **6 Claims**



1. In an indirect extrusion press of the type having a cross head, a ram, a pressing stem, a die, a shearing means, and a frame including a press bed and columns, and wherein a die stem is connected along a press axis on the rear end surface of a press platen and extends toward a container, an intermediate frame type indirect extrusion press which comprises:

an intermediate frame mounted on said frame, and movably interposed in the direction of the press axis between said press platen and said container;

guide means disposed between said intermediate frame and said frame for guiding said intermediate frame in a direction parallel to the direction of the press axis;

die stem support means carried by the intermediate frame

and engageable with the die stem for providing support thereto; and

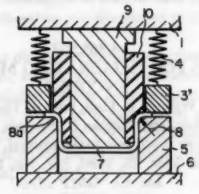
a driving device for moving said intermediate frame in the direction of the press axis whereby the movable intermediate frame and die stem guide means carried thereby can be moved along the die stem to provide support thereto and maintain accurate alignment of the die stem during extrusion and shearing operations.

4,365,498

METHOD OF MANUFACTURING FORMED ARTICLES, EQUIPMENT FOR PRACTICING SAME, AND FORMED ARTICLES MANUFACTURED BY THE METHOD

Kazumi Hirota, Tokyo, and Kikuo Matsuoka, Fujisawa, both of Japan, assignors to Toyo Seikan Kaisha, Limited, Tokyo, Japan

Division of Ser. No. 921,162, Jul. 3, 1978, Pat. No. 4,255,553.
This application Mar. 31, 1980, Ser. No. 135,759
Claims priority, application Japan, Jul. 5, 1977, 52/79532
Int. Cl.³ B21D *22/00*
U.S. Cl. 72—351 **10 Claims**



1. A punch cooperating with a die, the punch being movable relative the die for drawing a thin sheet having a relatively low rigidity into a cavity in the die, wherein

said punch comprises a core section, insertable in said cavity during the drawing, made of a rigid material and an elastic wall section made of an elastic material and surrounding said core section,

said die is formed with a radiused corner at a mouth of said cavity,

said elastic wall section has a freely exposed portion spaced apart from said radiused corner, the cross-sectional area of said elastic wall section being larger than that of the mouth of said cavity in said die,

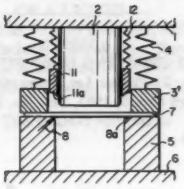
means for moving said punch into said cavity of said die with said thin sheet therebetween with said freely exposed portion of said elastic wall section entering said cavity so as to cooperate with said radiused corner and depress said thin sheet over said radiused corner such that said thin sheet is drawn while the surface of said thin sheet which is opposite to a face of said thin sheet which is brought into contact with the radiused corner of said die is depressed over said radiused corner of said die by an elastic pressure of said elastic wall section of said punch substantially throughout the drawing, thereby preventing creation of wrinkles on a formed article.

4,365,499

METHOD OF MANUFACTURING FORMED ARTICLES, EQUIPMENT FOR PRACTICING SAME, AND FORMED ARTICLES MANUFACTURED BY THE METHOD

Kazumi Hirota, Tokyo, and Kikuo Matsuoka, Fujisawa, both of Japan, assignors to Toyo Seikan Kaisha, Limited, Tokyo, Japan

Division of Ser. No. 921,162, Jul. 3, 1978, Pat. No. 4,225,553.
This application Mar. 31, 1980, Ser. No. 135,831
Claims priority, application Japan, Jul. 5, 1977, 52-79532
Int. Cl.³ B21D *22/00*
U.S. Cl. 72—351 **11 Claims**



1. A drawing machine comprising:

a punch, and a die having a cavity formed therein corresponding to said punch and having a radiused corner, said punch for drawing a thin sheet having a relatively low rigidity into said cavity in said die to manufacture a formed article, and

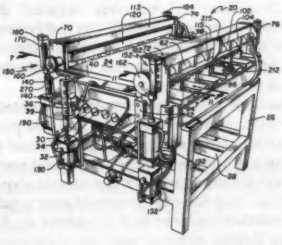
means comprising a depressing member having an end surface of the depressing member being formed substantially conforming to the shape of the radiused corner which is disposed movable around said punch in such a manner that said end surface of said depressing member is brought to cooperate with said radiused corner with said thin sheet therebetween into contact with a surface of said thin sheet which is opposite to a face of said thin sheet which is brought into contact with the radiused corner of said die and said sheet is depressed by said depressing member substantially throughout the drawing.

4,365,500

WEB BENDING FIXTURE

Roger Klukow, Champlin, Minn., assignor to Chesley F. Carlson Company, Minneapolis, Minn.

Filed Jan. 30, 1981, Ser. No. 230,281
Int. Cl.³ B21D *5/01*
U.S. Cl. 72—387 **27 Claims**



1. A web bending fixture for bending plates of metal having a leading edge and a trailing edge comprising:

a bed to support the plate to be bent;

at least one anvil having a bending radius at the edge of the bed;

at least one eccentric camming member having a bending surface positioned relative to the anvil to bend one of the edges of the plate around the bending radius of the anvil;

a full bearing supporting each end of the eccentric camming member for rotation;

a plurality of additional bearings intermediate the ends of the eccentric camming member within which the eccentric camming member is rotatably contained during rotation, the additional bearings being spaced along the length of the eccentric camming member to radially support the eccentric camming member throughout its length; and

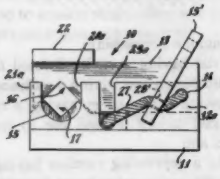
means for rotating the eccentric camming member around the bending radius of the anvil, the closest point on the bending surface of the eccentric camming member being spaced from the anvil at all times during rotation a distance equivalent to the thickness of the plate being bent.

4,365,501

TOOL FOR CRIMPING CONNECTOR SLEEVES

Douglas L. Potts, 21 Flicker La., Rowayton, Conn. 06853

Filed Sep. 8, 1981, Ser. No. 299,651
Int. Cl.³ B21D *37/10*
U.S. Cl. 72—416 **10 Claims**



1. A tool for crimping a connector sleeve onto a cable strand or the like comprising:

a base,

an anvil arm pivotally mounted relative to the base for a longitudinal edge thereof to swing toward and away from a portion of the base,

a die block adapted to be removably supported on the base in position for a longitudinal edge thereof to be engaged by said edge of said anvil arm when the latter is swung toward said base,

said anvil arm having a notch therein in said edge with at least the outward end portions of the walls of said notch being substantially flat and diverging outward to the mouth of said notch,

said die block having a pair of projections spaced in line on said edge thereof with their adjacent edges forming a notch whose mouth is narrower than said mouth of the notch in said anvil arm edge, the edges of said pair of projections that are relatively outward thereof being shoulders that are substantially flat and converge outward relative to said die block at an angle substantially corresponding to the angle at which said wall portions of said notch in said anvil arm diverge, and

said projections being dimensioned and located on said die block so that when said die block is in said position on said base and said anvil arm is swung for its said edge portion to swing toward said base, said flat end portions of said anvil arm notch engage and seat on said shoulders of said projections and thereby bring said two notches together into predetermined opposed alignment to form a crimp opening therebetween,

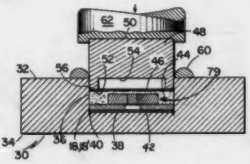
whereby when a connector sleeve whose diameter is less than the width of the mouth of said die block notch but more than the length of the shortest diameter of said crimp opening is laid longitudinally through said notch in said die block before said anvil arm edge is swung toward said base and said anvil arm is thereafter swung so that said flat end portions of its notch seat on said projection shoulders, walls of said notches engage and compress sides of said connector sleeve.

4,365,502

WIRE DRAWING DIE AND METHOD OF MAKING THE SAME

Charles Carson, Fort Wayne, Ind., assignor to Fort Wayne Wire Die, Inc., Fort Wayne, Ind.

Filed Nov. 19, 1980, Ser. No. 208,198
Int. Cl.³ B21C *3/02*; B21K *5/20*; B22F *7/04*
U.S. Cl. 72—467 **32 Claims**



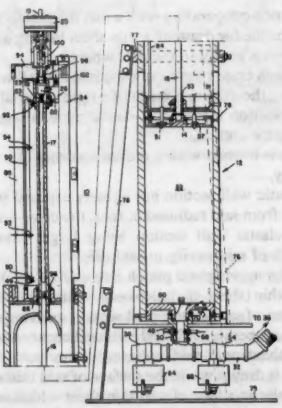
18. A wire drawing die comprising: a metal casing having front and back sides, said front casing side having a cylindrical cavity formed therein with a substantially flat bottom spaced from said back casing side; a cylindrical metal plug closely fitted in said casing cavity and having opposite ends, one of said plug ends facing and being spaced from said casing cavity bottom thereby defining a chamber extending across said cavity; a circular metal plate closely fitted in said chamber and having opposite sides; a die element in said chamber centered on one side of said plate and adhered thereto; means for securing said plate and die element in said chamber; said back side of said casing having a countersunk opening extending therethrough to said die element, the other end of said plug having a countersunk opening extending therethrough to said die element, said die element having a die opening therethrough communicating between said countersunk openings.

4,365,503

APPARATUS FOR CALIBRATING METER PROVER ENCODER

William W. Ho; William F. Hall, both of Thousand Oaks, Calif.; Harry W. Fisher, and Eugene B. Perrine, both of Pittsburgh, Pa., assignors to Rockwell International, Pittsburgh, Pa.

Filed Mar. 28, 1980, Ser. No. 136,077
Int. Cl.³ G01F *25/00*
U.S. Cl. 73—3 **15 Claims**



1. A method of calibrating a meter power, the meter prover including a chamber having the geometry of a right circular cylinder, the right circular cylinder having a diameter D and a length L, a piston adapted for rectilinear movement in the

chamber to direct fluid between a fluid meter under test and the chamber, and measuring means responsive to the relative movement of the piston to provide a signal indicative of the extent of piston movement, each incremental unit of the signal corresponding to an incremental movement of the piston and thus the volume of fluid directed through the fluid meter under test, said method of calibrating comprising the steps of:

(a) disposing the piston to a first position within the chamber;

(b) generating first and second electromagnetic fields within the chamber, each electromagnetic field being of a distinct, normal mode selected so that at its resonant condition within the chamber, the electric and magnetic component fields of the first and second fields are related to the diameter and length of the chamber;

(c) measuring first and second frequencies at which the first and second electromagnetic fields establish a resonant condition within the chamber;

(d) moving the piston to a second position displaced with respect to the first position, while accumulating the signal derived from the measuring means;

(e) generating third and fourth electromagnetic fields within the chamber, each electromagnetic field being of a distinct, normal mode selected that at its resonant condition within the chamber, the electric and magnetic component fields of the third and fourth fields are related to the diameter and length of the chamber;

(f) measuring the third and fourth resonant frequencies at which the third and fourth electromagnetic fields establish resonant conditions within the chamber;

(g) determining, based upon the first and second resonant frequencies, the diameter and length of and thus a first volume defined by the chamber and the piston at its first position, and based upon the third and fourth frequencies, the diameter and length of and thus a second volume defined by the chamber and the piston at the second position; and

(h) determining the displacement piston volume as the difference between the second and first volumes, and correlating the accumulated piston movement signal from the measuring means with the displacement volume to provide a manifestation of the value of the incremental fluid volume represented by an incremental unit of the piston movement signal.

4,365,504

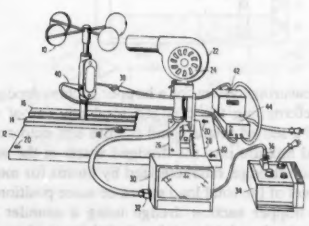
METHOD AND APPARATUS FOR FIELD TESTING OF ANEMOMETERS

Donald A. Haines, East Lansing; John S. Frost, Mason, both of Mich., and Rosalie J. Klumpp, Idleyld Park, Oreg., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Jun. 4, 1981, Ser. No. 270,676

Int. Cl.³ G01F *25/00*

U.S. Cl. 73—3 **6 Claims**



1. An apparatus for field testing anemometers comprising in combination:

a base;

means for mounting an anemometer having an output to be tested on said base;

an electrically driven blower having an adjustable manifold;

means for mounting said electrically driven blower on said base; and

an adjustable power supply means for supplying a constant pre-determined voltage to said electrically driven blower.

4,365,505

APPARATUS FOR DETERMINING THE GAS CONTENT OF A LIQUID

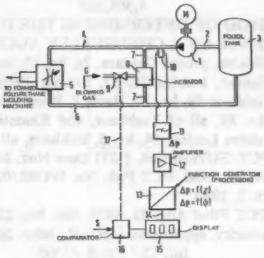
Emil Hölzl, Munich, Fed. Rep. of Germany, assignor to Krauss-Maffei Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jul. 2, 1980, Ser. No. 165,397

Claims priority, application Fed. Rep. of Germany, Jul. 18, 1979, 2929013

Int. Cl.³ G01N *7/00, 33/44*

U.S. Cl. 73—19 **6 Claims**



1. An apparatus for determining the gas content of a liquid, comprising:

pump means for generating a pulsating stream of a gas-containing liquid in a flow channel;

detector means disposed at said flow channel downstream of said pump means and responsive to the pulsations in the pulsating stream produced by said pump means for generating an intermediate signal indicative of the pressure-propagating characteristics of the liquid/gas mixture flowing in said channel;

electronic processing means connected to said detector means and preprogrammed with at least one characteristic curve for converting said intermediate signal into an output signal corresponding to a predetermined parameter representing the proportion of gas in said liquid; and

a load responsive to said output signal connected to said processing means.

4,365,506

REMOTELY OPERATED DOWNHOLE TEST DISCONNECT SWITCHING APPARATUS

Robert L. Hyde, Bartlesville, Okla., assignor to TRW Inc., Cleveland, Ohio

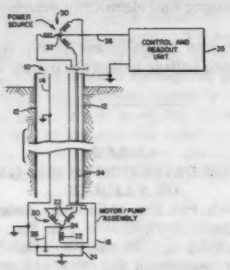
Filed Dec. 22, 1980, Ser. No. 219,250

Int. Cl.³ E21B *47/00*

U.S. Cl. 73—151 **15 Claims**

1. A remotely controlled switching apparatus for selectively controlling the connection of a downhole device to a cable which carries power to a downhole motor comprising temperature responsive switch means connected between the device and the cable, said switch means being in a first state when its temperature is below a predetermined temperature and being in a second state when its temperature is above the predeter-

mined temperature, means for impressing a switching signal onto the cable, and heater means responsive to the switching



signal for producing sufficient heat to raise the temperature of the switch means above said predetermined temperature.

4,365,507

METHOD OF DETERMINING THE DEPTH OF OCCURRENCE OF A CHEMICALLY AGGRESSIVE BED

Vitold M. Bakhir, proezd Gaidara, 7a, kv. 17; Stanislav A. Alekhin, Chilanzar, kvartal 24, 53, kv. 89; Tatiana M. Bakhir, proezd Gaidara, 7a, kv. 17; Raisa I. Born, Chilanzar, kvartal 24, 53, kv. 89, all of Tashkent, and Khamidulla A. Alimdzhanov, ulitsa Lenina, 14, kv. 5, Bukhara, all of U.S.S.R.

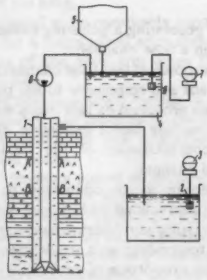
PCT No. PCT/SU79/00068, § 371 Date Nov. 26, 1980, § 102(e) Date Nov. 24, 1980, PCT Pub. No. WO80/02052, PCT Pub. Date Oct. 2, 1980

PCT Filed Aug. 21, 1979, Ser. No. 224,525

Claims priority, application U.S.S.R., Mar. 26, 1979, 2736510

Int. Cl.³ E21B *47/00*

U.S. Cl. 73—153 **3 Claims**



1. A method of determining the depth of occurrence of a chemically aggressive bed in the course of drilling a well with the use of a drilling mud, CHARACTERIZED in that the value and direction of the redox potential (the oxidation-reduction potential) of the drilling mud situated in the well are measured beforehand, whereupon the walls of the well are stripped of the mud cake, and an additional portion of the drilling mud featuring its redox potential differing as to the value and direction, from the redox potential of the drilling mud situated in the well is injected into the well until the mud is completely expelled therefrom, after which the circulation of the additional portion of the drilling mud is suspended for a period of time, wherein relaxation of the ion-exchange processes between the chemically aggressive bed and the additional portion of the drilling bed occurs, whereupon the additional portion of the mud resumes circulation, while the time interval between the resuming of the mud circulation till the beginning and end of returning the amount of the additional mud portion that has been in contact with the chemically aggressive bed, is registered against the deviation of the value and direction of the redox potential of the drilling mud, whereupon proceeding from said deviation the depth and interval of occurrence of the chemically aggressive bed is estimated.

4,365,508

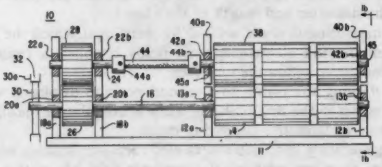
LIMPNESS DETECTOR FOR DOCUMENTS AND THE LIKE

Peter J. Loftus, Levittown, Pa., assignor to Brandt, Inc., Bensalen, Pa.

Filed Aug. 1, 1980, Ser. No. 174,595

Int. Cl.³ G01N *3/20*

U.S. Cl. 73—159 **34 Claims**



9. Apparatus for measuring limpness of moving sheets comprising:

a pair of moving surfaces arranged in spaced parallel fashion, said surfaces each having undulating peripheries which interleave one another;

means for yieldably urging said surfaces towards one another;

means directing said moving sheets into the nip formed by the interleaved peripheries of said moving surfaces whereby each sheet tends to exert a force urging said moving surfaces apart wherein the magnitude of said force is a function of the limpness of the sheet being examined; and

sensing means responsive to the relative spacing of said moving surfaces due to a sheet for generating a signal representing the limpness of the sheet being examined.

4,365,509

SYSTEM AND METHOD FOR DETERMINING THE WELL LOAD OF A HOPPER SUCTION DREDGE

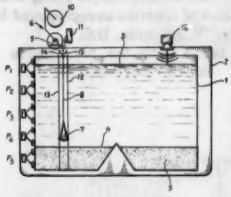
Christiaan A. Cornelis, Papendrecht, Netherlands, assignor to IHC Holland N.V., Papendrecht, Netherlands

Filed Feb. 18, 1981, Ser. No. 235,557

Claims priority, application Netherlands, Feb. 20, 1980, 8001034

Int. Cl.³ G01F *23/00*

U.S. Cl. 73—290 V **11 Claims**



1. Well measuring system for a hopper suction dredge, especially for determining the dredged total amount of mixture consisting of a settled mixture and of mire and mud contained as a fluidized mixture into the dredged water in the well of a hopper suction dredge, characterized by means for measuring the upper level of the total load at one or more positions in the well of the hopper suction dredge using a sounder device; means for measuring the upper level of the settled material at one or more suitable positions using a plumb device; means for determining the specific weight of the mire in the fluidized mixture in the area between the upper level of the total load

and the upper level of the settled material; means for determining the total amount of mire in the fluidized mire mixture based on the above mentioned data and on the other dimensions of the well.

4,365,510

METHOD AND DEVICE FOR MEASURING THE HEIGHT OF AT LEAST ONE SEPARATION LAYER IN THE MATERIAL BED OF A DENSITY SORTING MACHINE

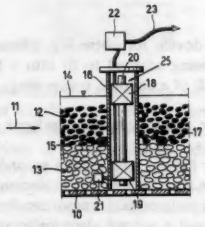
Rainer Imhof, St. Augustin; Wolf-Diethard Grünberg, Bergisch Gladbach, and Karl-Heinz Unkelbach, Cologne, all of Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz AG, Fed. Rep. of Germany

Filed Nov. 14, 1980, Ser. No. 206,958

Claims priority, application Fed. Rep. of Germany, Nov. 19, 1979, 2946605

Int. Cl.³ G01N *9/12*; G01F *23/10*

U.S. Cl. 73—313 **14 Claims**



1. Apparatus for use in a density grading machine having a bed containing solids material and a predetermined range of densities to detect the height of a boundary layer between materials of different densities within the bed comprising:

a measuring body having a generally solid cross section and an overall density substantially equal to the density of material along said boundary layer and being free floating in said bed;

a transmitter means embedded in said measuring body;

said measuring body having a generally uniform density distribution and said transmitter means having a density substantially equal to the density of said measuring body;

a probe mechanism for monitoring the relative position of said measuring body in said bed; and

housing means for said probe disposed in said bed in the direction of the density gradient therein.

4,365,511

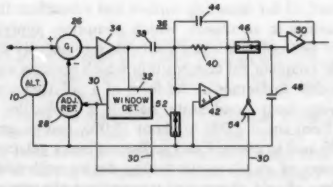
DATA RATE GENERATOR

John M. Nixon, Bedford, Tex., assignor to Edo-Aire Mitchell, Mineral Wells, Tex.

Filed Jan. 6, 1981, Ser. No. 222,993

Int. Cl.³ G01L *7/00*; G01C *21/00*

U.S. Cl. 73—384 **10 Claims**



1. A rate circuit for an input signal having a slowly varying amplitude, comprising:

an adjustable reference source;

means for summing an input signal with the output of said adjustable reference source to generate an error signal varying the difference therebetween;

means for monitoring the amplitude of the error signal within predetermined limits;

means for changing the output of said adjustable reference source when the error signal approaches a predetermined limit; and

means including rate means connected to receive the error signal of said means for summing, said rate means generating an output having an amplitude varying with the input.

4,365,512

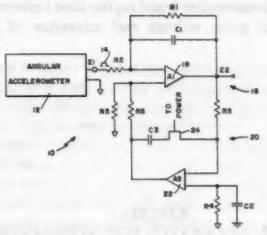
NULL CIRCUIT FOR USE IN AN ANGULAR RATE INSTRUMENT

James R. Woodruff, Concord, Calif., assignor to Systron-Donner Corporation, Concord, Calif.

Continuation-in-part of Ser. No. 90,108, Nov. 1, 1979, abandoned. This application Dec. 15, 1980, Ser. No. 216,194

Int. Cl.³ G01P *7/00*

U.S. Cl. 73—503 **12 Claims**



1. An angular rate instrument adapted for mounting to a given object for measuring the rate of turn of the latter, comprising: means for producing a first signal responsive to and dependent on the angular acceleration to which said instrument is subjected; means responsive to said first signal at one input and a reference signal at a second input for integrating the difference between the two latter signals to produce an integrated output signal corresponding to the rate of turn to which said instrument is subjected; and means including a capacitor connected to the second input of said signal integrating means for producing said reference signal such that the magnitude of the latter is dependent on the magnitude of charge on said capacitor, said last named means also being connected with the output of said integrating means and including means responsive to signals at said output below a predetermined frequency for charging said capacitor to a magnitude depending on said last mentioned signals, and means for preventing said capacitor from losing its charge during interruptions of power to said instrument.

4,365,513

DECELERATION SENSOR

Shinichiro Iwasaki, Auburn Heights, Mich., assignor to Aisin Seiki Company, Limited, Aichi, Japan

Filed Aug. 29, 1980, Ser. No. 182,845

Int. Cl.³ G01P *15/11*

U.S. Cl. 73—517 R **39 Claims**

1. A deceleration sensor comprising:

magnetically soft core means having an electrical coil wound thereon,

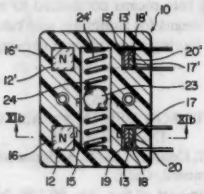
permanent magnet means for creating a magnetic flux,

spring means,

a movable ferromagnetic member normally biased by said spring means and adapted to be displaced against said spring means in response to deceleration to thereby

change the magnetic flux acting on said magnetically soft core means, and

detection means for applying a predetermined pulse voltage to said electric coil to saturate said core means and for detecting changes in the external magnetic field strength provided by said permanent magnet means acting on said



magnetically soft core means according to changes in the relative position of said ferromagnetic material member, comprising means for producing an output signal indicative of the deceleration based on the time between application of said pulse voltage and saturation of said core means.

4,365,514

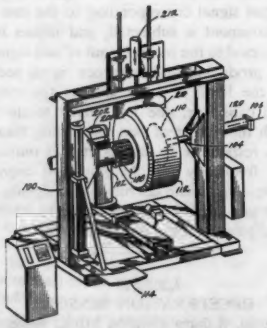
METHOD AND APPARATUS FOR NON-DESTRUCTIVE INSPECTION OF TIRES

Morris D. Ho, Walnut Creek, Calif., assignor to Bandag Incorporated, Muscatine, Iowa

Division of Ser. No. 31,962, Apr. 19, 1979, Pat. No. 4,285,235. This application May 11, 1981, Ser. No. 262,706

Int. Cl.³ G01M *3/24*

U.S. Cl. 73—592 **9 Claims**



1. Tire testing apparatus for detecting air leaks from pressurized tires, said apparatus comprising:

an ultrasonic transducer for converting ultrasonic vibrations in excess of about 40 KHz into corresponding electrical signals;

means for mounting and moving the wall of an inflated tire past said ultrasonic transducer; and

signal processing means connected to said transducer for detecting the presence of ultrasonic signals in excess of about 40 KHz generated by air escaping from a leak in the tire wall.

4,365,515

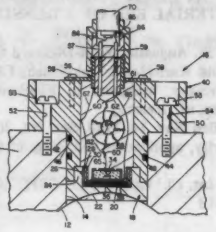
ULTRASONIC SENSING

Leigh R. Abts, Providence, R.I., assignor to Micro Pure Systems, Inc., North Providence, R.I.

Filed Sep. 15, 1980, Ser. No. 187,615

Int. Cl.³ G01N *24/00, 29/00*

U.S. Cl. 73—632 **5 Claims**



1. A pulse-echo device for obtaining information about a fluid, said device being adapted to fit into a hole extending through the sidewall of a conduit, comprising:

a transducer unit,

said transducer unit having a transducer for producing energy waves,

said transducer having a first and a second electrode,

said transducer also having a first electrically-grounded shield which isolates said transducer from the fluid in the conduit and a second electrically-grounded shield which is separated from said first shield and which completely surrounds said transducer,

at least a portion of said transducer unit being adapted to connect to a pipe so as to direct the focused energy waves into fluid flowing through the conduit.

4,365,516

ULTRASONIC COUPLANT GEL COMPOSITIONS AND METHOD FOR EMPLOYING SAME

Orlando G. Molina, Westminster, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jan. 6, 1978, Ser. No. 867,549

Int. Cl.³ C09K *3/00;* G01N *29/04*

U.S. Cl. 73—644 **29 Claims**

1. A method for detecting surface and subsurface flaws and discontinuities in an object, which comprises applying to a surface of said object a water washable substantially non-toxic ultrasonic couplant gel composition which consists essentially of a nonionic surfactant in the form of a poly(oxypropylene) poly(oxyethylene) condensate having a molecular weight ranging from about 1,000 to about 15,000, and an amount of silica sufficient to convert said surfactant into a gel, contacting a transducer of an ultrasonic testing device with said gel on said surface of said object, and transmitting ultrasonic energy through said gel and into said object to inspect said object and locate any surface or subsurface flaws, cracks or discontinuities in said object, and removing said ultrasonic couplant composition from said surface.

4,365,517

LINEAR DIFFERENTIAL FOUCAULT CURRENT DETECTOR SERVING FOR MEASURING SMALL DISPLACEMENTS OF A METALLIC ELEMENT

Francois Ramel, Levallois, and Alain Rousseau, Paris, both of France, assignors to Effa Etudes, France

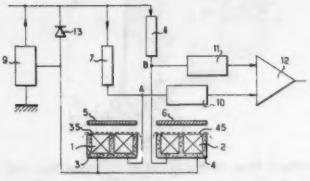
PCT No. PCT/FR80/00034, § 371 Date Nov. 12, 1980, § 102(e) Date Nov. 10, 1980, PCT Pub. No. WO80/01951, PCT Pub. Date Sep. 18, 1980

PCT Filed Mar. 11, 1980, Ser. No. 224,506

Claims priority, application France, Mar. 12, 1979, 79 06206

Int. Cl.³ G01D *5/20;* G01L *9/10*

U.S. Cl. 73—722 9 Claims



1. Displacement detector comprising two substantially identical windings of which at least one co-operates with a conductive element the displacements of which are to be measured, means for applying to these windings, respectively in series with two resistances, rectangular signals of low frequency, means for detecting the peak values of voltages respectively received at the common points between the respective windings and the corresponding resistances, and means for determining the difference between these peak values, characterised in combination in that the said element is of non-ferromagnetic metal, that the two windings are directly coupled to a common point of application of the said signals, and that a free wheel diode couples the same common point to the common point of the resistances.

4,365,518

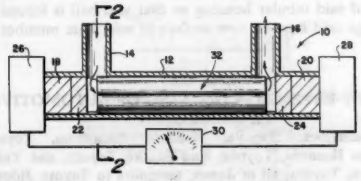
FLOW STRAIGHTENERS IN AXIAL FLOWMETERS

Ellis M. Zacharias, Jr., Tulsa, Okla., assignor to Mapco, Inc., Tulsa, Okla.

Filed Feb. 23, 1981, Ser. No. 236,932

Int. Cl.³ G01F *1/66*

U.S. Cl. 73—861.31 8 Claims



1. An improved sonic flowmeter comprising:

a conduit having an inlet and outlet through which fluid flows for flow rate measurement, a portion of the conduit providing a linear flow path;

first and second spaced apart sonic transducer elements positioned to transmit and receive sound energy travelling through fluid as it traverses said conduit linear flow path;

means for detecting the speed of sound transmission between said transducer elements as an indication of the rate of fluid flow through said linear flow path; and

a means within said linear flow path of separating the fluid stream into a plurality of reduced cross-sectional area streams, each providing a separate linear flow path through which sound is transmitted between said transducer elements.

4,365,519

ADJUSTABLE SPRING UNIT FOR USE IN FORCE MEASURING APPARATUS

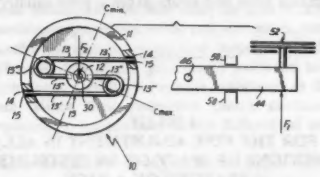
Matti Hietaranta, Nattari, Finland, assignor to Valmet Oy, Finland

Continuation-in-part of Ser. No. 18,833, Mar. 8, 1979, abandoned. This application Aug. 27, 1980, Ser. No. 183,095

Claims priority, application Finland, Mar. 9, 1978, 780753

Int. Cl.³ G01L *1/04*

U.S. Cl. 73—862.52 8 Claims



1. In force measuring apparatus, a unit for measuring a directional force, said unit having an adjustable effective spring constant so that the unit can operate in varying ranges of the forces to be measured, comprising:

a ring-shaped member adapted to be rotatably connected to a fixed frame about an axis of rotation in a manner such that the rotational position of said ring-shaped member is selectively adjustable with respect to said fixed frame;

a hub member disposed within said ring-shaped member for movement with respect thereto, said hub member being arranged so as to be receivable of a directional force proportional to the force to be measured; and

spring means interconnecting said ring-shaped member and said hub member in a manner so as to resist movement of said hub member under the action of the directional force received thereby, whereby the effective spring constant presented by said spring means is selectively adjustable between a maximum value and a minimum value by selectively rotating said unit about the axis of rotation, and such that upon the directional force being imparted to said hub member, the latter will move within said ring-shaped member in the direction of said force over a distance which is inversely proportional to the selected spring constant of said spring means.

4,365,520

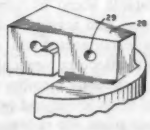
STRAIN GAGE TRANSDUCERS

Hooshmand Zaghi, Oxnard, Calif., assignor to Gould Inc., Rolling Meadows, Ill.

Filed Jan. 7, 1981, Ser. No. 223,068

Int. Cl.³ G01L *1/22*

U.S. Cl. 73—862.63 14 Claims



4. In a transducer having first and second strain gages, the improvement comprising:

a thermally conductive deformable beam comprising a block

and defining a first surface portion on which the first strain gage is mounted and a second surface portion on which the second strain gage is mounted, said beam defining a first thermal conductivity path from said first gage and a second thermal conductivity path from said second gage, said beam being provided with at least one cavity in the portion thereof defining said second path causing said second path to define a different physical configuration from the physical configuration of said first path, said first path defining a first heat receiving sink and said second path defining a second heat receiving sink, said paths, including said sinks, being arranged to be substantially identical in effective thermal conductivity notwithstanding said different physical configurations whereby heat dissipation from said strain gages is substantially similar.

4,365,521

DEVICE FOR THE FINE ADJUSTMENT IN ALL THREE DIRECTIONS OF SPACE OF AN INSTRUMENT ARRANGED ON A BASE

Kurt Kohler, Konigsbronn, Fed. Rep. of Germany, assignor to Carl Zeiss-Stiftung, Oberkochen, Fed. Rep. of Germany

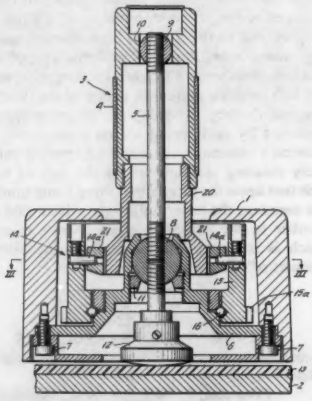
PCT No. PCT/DE80/00001, § 371 Date Oct. 23, 1980, § 102(e) Date Oct. 6, 1980, PCT Pub. No. WO80/01751, PCT Pub. Date Sep. 4, 1980

PCT Filed Jan. 10, 1980, Ser. No. 197,983

Claims priority, application Fed. Rep. of Germany, Feb. 23, 1979, 2907099

Int. Cl.³ G05G *7/00*; A61B *3/12*

U.S. Cl. 74—471 XY **5 Claims**



1. A device for the fine adjustment of an instrument base in all directions of space, said adjustment being effected by an actuating member adapted to swing sideways for horizontal adjustment and rotatable about its vertical axis for vertical adjustment of said base, said actuating member comprising an outer rotatable handle connected via a universal joint to a rotatable member for effecting vertical displacement of the instrument base, said actuating member further comprising an inner lever provided at its lower end portion with a ball foot which contacts a base plate, the radius of said ball foot being equal to the distance between the pivot point of the handle and the base plate, said inner lever being supported by a lower support sleeve fixably attached to the instrument base and adapted to non-rotatably support said inner lever while allowing said lever to swing horizontally in all directions.

4,365,522

SHIFT LEVER MECHANISM OF AN AUTOMATIC TRANSMISSION

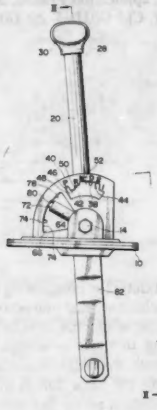
Shikibu Kubota, Koganei, and Yuichi Uriya, Tokyo, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Dec. 19, 1980, Ser. No. 218,330

Claims priority, application Japan, Dec. 21, 1979, 54-178153[U]

Int. Cl.³ G05G *5/14*

U.S. Cl. 74—475 **10 Claims**



1. A shift lever mechanism for use with a vehicle automatic transmission, comprising:

first means for selecting one of the operational modes of the automatic transmission;

second means for retaining the first means in certain ones of its selected operational modes;

a plate member arranged stationary relative to the vehicle body, said plate member being formed with a stepped cam surface;

a cylindrical rod swingable about its axis in response to operation of said first means relative to said plate member;

a tubular housing connected to said cylindrical rod to be swingable therewith about the axis of said cylindrical rod;

a ball rotatably mounted on the free end of said tubular housing; and

biasing means for biasing said ball to project from the open end of said tubular housing so that said ball is forced to engage said stepped cam surface of said plate member.

4,365,523

DIE-CAST EXTENSION HOUSING OF AUTOMOTIVE TRANSMISSION

Akio Numazawa, Nagoya; Nobuaki Katayama, Toyota; Kazuhito Ikemoto, Toyota; Kan Sasaki, Toyota, and Yukio Terakura, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jul. 24, 1980, Ser. No. 171,758

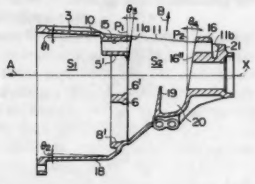
Claims priority, application Japan, Apr. 4, 1980, 55-44368

Int. Cl.³ F16H *57/02*

U.S. Cl. 74—606 R **1 Claim**

1. A die-cast transmission extension housing comprising a shell having a first end at which said extension housing is adapted to be connected to a transmission casing, said first end defining therein a first opening, a second end defining therein a second opening for a transmission output shaft, a bearing supporting means provided between said first and second ends for supporting at least one bearing for said transmission output shaft, said bearing supporting means comprising a partition wall die-cast integrally with said shell, said shell comprising a first part extending between said first end and said partition

wall and a second part extending between said partition wall and said second end, said first part of said shell and said partition wall cooperating to define a first inner space divergent to a peripheral edge of said first opening, said second part of said shell having a top formed therein with a third opening adapted to be closed by a shift lever retainer, said second part of said shell, said partition wall and said second end cooperating to define a second inner space communicating with said second and third openings, said partition wall having a first surface facing said second inner space and extending between said top of said second part of said shell and a bottom of said second



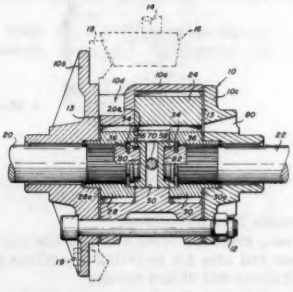
part, said first surface comprising upper and lower sections, said upper section being inclined toward said second end of said shell at a first angle relative to a plane normal to the axis of said transmission output shaft with said lower section being substantially normal to said axis, said second end of said shell having a second surface facing said second inner space and extending generally downwardly from said top of said second part of said shell, said second surface being inclined away from said partition wall relative to said plane normal to said axis at a second angle greater than said first angle so that said upper section of said first surface and said second surface are divergent to said third opening.

4,365,524

TORQUE-PROPORTIONING DIFFERENTIAL WITH WEDGE BLOCK THRUST BEARING MEANS

Walter L. Dissett, Southfield, and James R. Bawks, St. Clair Shores, both of Mich., assignors to Tractech, Inc., Detroit, Mich.

Filed Sep. 5, 1980, Ser. No. 184,393
Int. Cl.³ F16H *1/38*
U.S. Cl. 74—715 **4 Claims**



1. Gear differential apparatus for supplying driving torque from a drive shaft to a pair of aligned output shafts, comprising

(a) a sectional differential carrier housing (**10**) adapted to be rotatably driven by the drive shaft, said housing including a center body section (**10*a***) and a pair of end cover sections (**10*b***, **10*c***) connected on opposite sides of said center body section;

(b) a pair of annular helical side gears (**28**, **30**) journalled in corresponding aligned bores contained in opposite ends of said center body section, respectively, said side gears having splined inner circumferences for non-rotatable connection with the output shafts when the adjacent ends of the shafts extend in axially spaced relation through aligned openings contained in said end cover sections, respectively;

(c) lock means (**34**) preventing axial outward displacement of the output shafts relative to the side gears, respectively;

(d) a plurality of pairs of differential helical pinions (**24**, **26**) having threads of opposite hands, respectively, the pinions of each pair being mounted with an outside diameter running fit within bores (**40**, **42**) contained in opposite ends of said center housing section, respectively, the adjacent ends of said bores being in communication and the adjacent ends of said differential helical pinions being in overlapping enmeshing engagement with each other, said pinions having axes parallel with the axes of, and being in enmeshing engagement with, said side gears, respectively, whereby the torque transmitted through said differential mechanism introduces gear tooth loads on said pinions which cause a frictional torque resistance as the pinions rotate within their respective pinion cavities, thereby introducing a torque bias in the differential mechanism; and

(e) spacer means (**54**) arranged between said side gears for maintaining said output shafts in spaced relation;

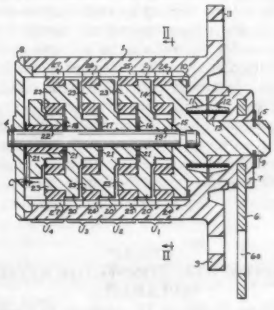
(f) said housing center body section containing at each end first recessed portions (**10*d***) opposite the helical pinion bores (**40**, **42**) formed in the opposite ends of the center body section, respectively, and second recessed portions (**10*e***) extending longitudinally of the center body section between each pair of helical pinion bores.

4,365,525

DAMPER

Yasutaka Imazaike, 8-22, Tanabe-nishinocho, Higashi-sumiyoshi-ku, Osaka, Japan

Filed Jun. 17, 1980, Ser. No. 160,357
Claims priority, application Japan, Jul. 5, 1979, 54-85649
Int. Cl.³ F16H *57/10*; F16D *13/76*
U.S. Cl. 74—768 **7 Claims**



1. A damper comprising a damper case, an internal gear formed on the inner periphery of said damper case, a shaft means rotatably mounted in said damper case, planetary gear units provided around said shaft means and arranged in a plurality of stages axially thereof, each gear unit comprising a sun gear, a plurality of planetary gears and said internal gear, the planetary gear of the unit in the first stage being rotatably supported by said shaft means, the planetary gears of each of the units in the second and following stages being rotatably supported by the sun gear in the immediately preceding stage, actuation means rotatably mounted on said damping case and adapted to provide a damping effect, and clutch means operably disposed between said shaft means and said actuation means to connect said shaft means to said actuation means

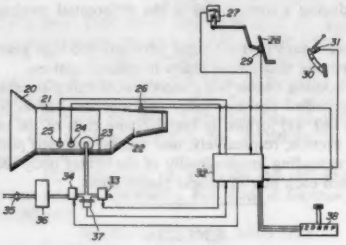
when said actuation means is rotated in one direction and to disconnect said shaft means from said actuation means when said actuation means is rotated in the opposite direction, said gear units being constructed and arranged to provide a multi-stage, series meshing engagement which thereby offers rotational resistance to said shaft means to thereby provide damping of said actuation means when said actuation means is rotated in said one direction, and to preclude said damping effect when said actuation means is rotated in the opposite direction.

4,365,526

APPARATUS FOR CONTROLLING LINE PRESSURE OF AUTOMATIC TRANSMISSION

Masaaki Suga, Yokohama, and Hideo Hamada, Yokosuka, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed May 20, 1980, Ser. No. 151,636
Claims priority, application Japan, May 21, 1979, 54-61514
Int. Cl.³ B60K *41/04*
U.S. Cl. 74—866 **7 Claims**



1. In an automotive vehicle having an automatic transmission, with friction elements which are selectively actuated to effect speed changes in said transmission, hydraulic means hydraulically connected to said friction elements for applying fluid under pressure to said friction elements, the torque transmission capability of said friction elements varying with said pressure of said fluid applied to said friction elements, and pressure regulating means operatively connected with said hydraulic means for controlling the pressure of the fluid applied to said friction elements, the improvement comprising control means operatively associated with said transmission and said regulating means and responsive to predetermined operating conditions of said automotive vehicle under which engine braking is desired to automatically cause said transmission to downshift and to cause said pressure regulating means to increase the pressure of the fluid applied to said regulating means in response to said predetermined operating conditions.

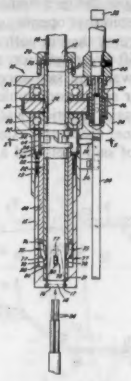
4,365,527

AUTOMATIC WIRE CONNECTOR ATTACHING APPARATUS

Robert W. Kruse, Rockford, Ill., assignor to Gardner Bender, Inc., Milwaukee, Wis.

Filed Apr. 3, 1981, Ser. No. 250,842
Int. Cl.³ B25B *23/04*
U.S. Cl. 81—431 **9 Claims**

1. In an apparatus for automatically rotating screw-on connectors onto the stripped ends of electric wires, an elongated housing with an inlet opening at one end for the reception of said connectors and an outlet opening at the other end for the discharge thereof, a rotatable and hollow drive shaft in said housing, said connectors being received in said hollow drive shaft, cam surfaces in said drive shaft and adjacent said outlet opening, a sleeve concentric with and around said drive shaft and rotatable therewith, a plurality of fingers secured at one end to said sleeve and each having a free end, manually operated cam means acting between said housing and said sleeve for axially moving said sleeve toward said outlet opening to cause engagement of said fingers with said cam surfaces and



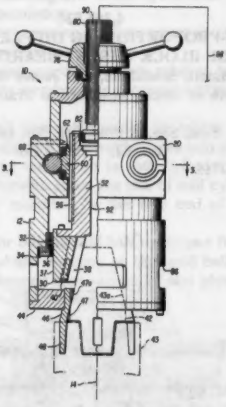
gripping engagement of said fingers with a connector located adjacent said outlet opening.

4,365,528

PORTABLE LATHE

William H. Astle, 2380 LaLoma Dr., Rancho Cordova, Calif. 95670

Filed Nov. 12, 1980, Ser. No. 205,988
Int. Cl.³ B23B *5/16*
U.S. Cl. 82—4 C **1 Claim**



1. A portable lathe comprising:

(a) a housing extending along a longitudinal axis and having an open end area for receiving a workpiece to be machined at one end of said housing;

(b) an annular cutter head and carrier shaft assembly disposed within the housing and arranged to be rotated about and translated along said rotational axis, the cutter head part of said assembly including a radially outer surface defining a cylindrical bearing guide surface and an inner annular area;

(c) one or more cutter bits mounted on the inner annular area of the cutter head part of said assembly, the cutter bit or bits being inclined relative to the longitudinal axis to cut a conical taper on a workpiece inserted into said open end of the housing and presented to the cutter head part, the taper converging towards the interior of the housing;

(d) an annular, rotatable ring gear drivingly connected to the exterior of the carrier shaft part of said cutter head and carrier shaft assembly, said carrier shaft part slidable longitudinally within said ring gear, said ring gear fixed against longitudinal motion along said longitudinal axis;

(e) dual drive shafts extending through the housing and drivingly connected to said ring gear on opposed sides of said ring gear;

(f) rolling bearing means within the housing and in engagement with said bearing guide surface of said cutter head part for supporting and locating said cutter head part while the latter is rotating and translating about and along said longitudinal axis;

(g) feed means for causing said cutter head and carrier shaft assembly to translate along said longitudinal axis towards or away from said open end of said housing, said feed means including a threaded nut secured to the housing for rotational movement and a threaded feed rod axially movable within said feed nut and threadedly engaged therewith, said feed rod connected to said carrier shaft part of said cutter head and carrier shaft assembly through a joint connection permitting relative rotation between the feed rod and said carrier shaft part, whereby rotation of the feed nut causes the cutter head and carrier shaft assembly, and the feed rod, to translate along said longitudinal axis while said assembly is rotating, while said ring gear is rotating but not translating, and while said feed rod is translating but not rotating;

(h) a work,piece annular guide located at said open end of said housing, said guide having a conical interior opening symmetrical about and concentric with said longitudinal axis, said conical opening of said guide converging towards said cutter head and carrier assembly; and

(i) a plurality of projections extending axially in front of the housing opening about said conical interior opening of said guide and concentric with said opening for engaging cooperating openings in a workpiece presented in said open end of said housing for preventing relative rotation between such workpiece and the housing.

4,365,529

HYDRODYNAMIC INJECTION DEVICE FOR MACHINE TOOLS

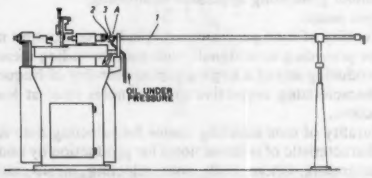
Walter Neukomm, deceased, late of Court, Switzerland (by Marguerite Neukomm, heiress), assignor to Societe de Vente et de Fabrication pour le Decolletage LNS S.A., Berne, Switzerland

Filed Apr. 8, 1980, Ser. No. 138,441

Claims priority, application Switzerland, Apr. 17, 1979, 3618/79

Int. Cl.³ B23B *13/08*

U.S. Cl. 82—38 A **7 Claims**



1. In a device comprising a hydraulic stock-guiding tube containing a first liquid and forming part of a machine-tool feed apparatus having a general hydraulic circuit, the improvement comprising:

a hydrodynamic injection means disposed at the output end of the stock-guiding tube, comprising an annular nozzle adapted to encircle a piece of bar stock, said nozzle including at least one fluid ejection passage disposed at an angle to the longitudinal axis of said annular nozzle and opening out on the inside surface thereof in a direction opposite to the direction of flow of the first liquid, so that a fluid flowing out of said nozzle flows in a direction opposite to the flow of the first liquid and thereby creates an overpressure zone in the output end of the stock-guiding tube.

4,365,530

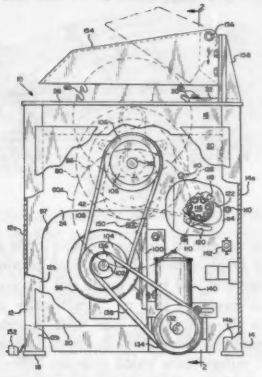
ORBIT SAW

Nolton C. Johnson, Jr., and David A. Rein, both of Bend, Oreg., assignors to Mid Oregon Iron, Inc., Bend, Oreg.

Filed Oct. 31, 1980, Ser. No. 202,562

Int. Cl.³ B23D *45/04, 47/12*

U.S. Cl. 83—490 **9 Claims**



1. An orbit saw comprising:

a frame including an upstanding mounting plate,

a driven shaft extending through and rotatably supported in said mounting plate with ends on either side of said plate,

orbit arm structure concentric with the driven shaft and rotatably mounted on one protruding end of the driven shaft on one side of said plate,

an arbor shaft laterally offset from the driven shaft and journalled on said orbit arm structure,

a driven wheel member on said one side of the plate concentric with the driven shaft and secured to the orbit arm structure,

a first motor of variable speed and an output shaft driven by said first motor located on said one side of the plate and positioned laterally of said driven shaft and belt means connecting said output shaft and said driven wheel member,

a second motor with an output shaft and power-transmitting means on the other side of said plate connecting the second motor's output shaft and said driven shaft, and

power-transmitting means connecting said driven shaft and said arbor shaft.

4,365,531

MITER BOX CONSTRUCTION

Alfred M. Potvin, St. Lambert, Canada, assignor to Mita Wood Products Inc., Montreal, Canada

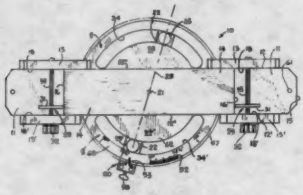
Filed Nov. 10, 1980, Ser. No. 205,513

Int. Cl.³ B27G *5/02*

U.S. Cl. 83—767 **10 Claims**

1. A mitre box comprising a base having a flat top surface and opposed parallel elongated side edges, a pair of spaced apart side walls extending from at least one of said side edges transversely above said flat top surface, said side walls having a flat inner surface to form right angle walls with said flat top surface, a saw blade guide mechanism between said pairs of side walls, said mechanism comprising an arcuate guide means adjacent each said side edges intermediate said pair of side

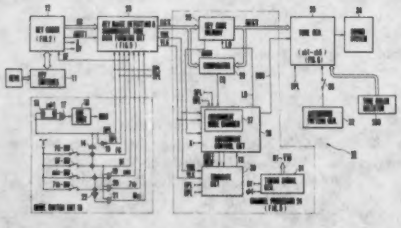
walls and disposed on a circular axis of a common center point, said guide means having a diametrical pivotal base member pivotally secured on said center point below said flat top surface, support guide means secured to said pivotal base member and extending transversely above said flat top surface and displaceable along an arcuate path between each said pairs of side walls, said support guide means each having a saw blade guide slot axially aligned on a common diametrical axis extending across said opposed side edges and passing through said center point, arresting means to immovably secure said pivotal base member at a desired position along said arcuate guide means, said support guide means being a tubular member secured at a base thereof to a respective end of said base member, a hollow piston receiving portion above said base and terminating in an open top end to receive a piston blade guide member for free axial displacement therein, said piston blade guide member having said saw blade guide slot therein, said hollow piston portion having a pair of diametrically aligned piston guide slots in the cylindrical side wall thereof and axially aligned with said saw blade guide slot in said piston blade guide member, said piston blade guide member being an elongated cylinder member being of smaller outer diameter than the inner diameter of said tubular member, said cylinder member having a transverse diametrical slot extending from a bottom end to a point below a solid top portion, and an elongated narrow rib in an outer face of said cylinder and disposed adjacent at least one side edge of said transverse diametrical slot, said rib protruding in a respective one of said piston guide slots.



4,365,532
ELECTRONIC MUSICAL INSTRUMENT WITH PLURAL TONE PRODUCTION CHANNELS

Akira Nakada, and Takeshi Adachi, both of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Aug. 28, 1980, Ser. No. 182,464
Claims priority, application Japan, Sep. 3, 1979, 54-112580
Int. Cl.³ G10H *1/06, 1/38*
U.S. Cl. 84—1.19 **8 Claims**

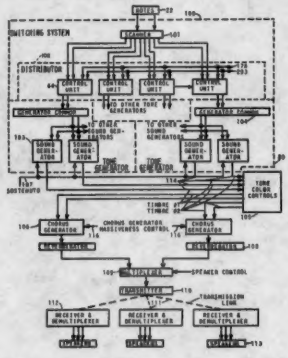


1. An electronic musical instrument comprising:
keyboard means provided with a plurality of keys;
musical tone generating means including a plurality of musical tone production channels of a number smaller than that of a total number of said keys;
assigning means for assigning a tone production corresponding to a depressed key of a group comprising certain keys of said plurality of keys to one of said musical tone production channels;
means for selecting a performance mode of the electronic musical instrument from among a plurality of performance modes and for dividing said musical tone production channels into a plurality of groups in accordance with the set performance mode; and
assignment mode changing means for changing musical tone production channels belonging to a channel group to which the keys in said key group are assigned in accordance with an output of said performance mode selecting means;
said assigning means assigning tone production of the depressed key of said key group to one of said musical tone production channels of said channel group determined by said assignment mode changing means;
said musical tone production means acting to make different manners of tone production among respective channel groups according to the output of said performance mode selecting means.

4,365,533
MUSICAL INSTRUMENT

Melville Clark, Jr., 8 Richard Rd., Cochituate, Mass. 01778, and David A. Luce, Natick, Mass., assignors to Melville Clark, Jr., Cochituate, Mass.

Continuation of Ser. No. 495,130, Aug. 5, 1974, abandoned, which is a continuation-in-part of Ser. No. 148,514, Jun. 1, 1971, abandoned. This application Jun. 11, 1976, Ser. No. 695,042
Int. Cl.³ G10H *1/02*
U.S. Cl. 84—1.24 **111 Claims**



1. Sound generating apparatus comprising,
output means,
a plurality of tone generators coupled to said output means for providing note signals with each including means for producing any of a large common plurality of frequencies characterizing respective musical notes over at least an octave,
a plurality of note selecting means for selecting note signals characteristic of selected notes for production by said tone generators where each note selecting means includes means upon selection for providing a note selection signal representing a unique contribution to a signal waveform on said output means which note selection signal is representative of at least one of speed of note selection and force applied to note selecting means,
control means coupled to said tone generators for providing continuous data signals to said tone generators representative of the selected note signals and for selecting which of said tone generators coupled to said output means is to provide said note signals,
and scanning means responsive to said note selecting means

for coupling the selected note selection signals to said control means,

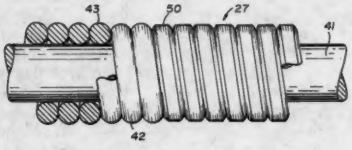
wherein each of said tone generators includes means for varying the frequencies thereof and may be associated with any note and includes means for generating the frequencies of notes at least a semitone apart and said control means includes means for associating different ones of said tone generators with each note selected by said note selecting means for controlling the frequency of an associated tone generator in accordance with that of the associated note.

4,365,534

MODIFIED MUSICAL INSTRUMENT STRING

Stanley E. Rendell, Kalamazoo, Mich., assignor to Sterlingworth Music, Inc., Kalamazoo, Mich.

Filed Mar. 11, 1980, Ser. No. 129,481
Int. Cl.³ G10D *3/10*
U.S. Cl. 84—297 S **3 Claims**



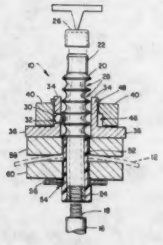
1. A musical instrument string comprising a core having a fine cover wire helically wound thereon, said cover wire having a substantially round cross-section over the major proportion of its surface, but having compressed flats at the crown of said wire at the outer surface of said string but not at the inner surface of said cover wire.

4,365,535

QUICK RELEASE LOCKING MECHANISM

Ronald Buttner, Bellmore, N.Y.; Herbert Dolowich, 905 Grant Pl., North Bellmore, N.Y. 11710, and Chaim Zelman, Roslyn, N.Y., assignors to Herbert Dolowich, North Bellmore, N.Y.

Filed Jan. 9, 1981, Ser. No. 223,705
Int. Cl.³ G10G *5/00*
U.S. Cl. 84—421 **12 Claims**



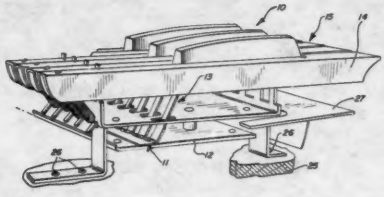
1. In a cymbal mounting arrangement including a cymbal rod having a threaded end, a cymbal having a central opening for passage of the cymbal rod and support means for suspending the cymbal on said rod, the improvement comprising a quick release locking mechanism, said locking mechanism having an adaptor threadably engageable on said cymbal rod, a collar member slidably mounted on said adaptor, said collar member including an aperture for seating a locking ball, a ring member rotationally displaceable about said collar member, said ring member including a camming surface for selectively urging said locking ball toward the adaptor for interlocking engagement therewith to thus secure the collar at selected locations along the adaptor for adjustable cymbal vibration dampening.

4,365,536

SLIDING ACTUATOR MEMBRANE SWITCH FOR ORGAN KEYBOARD

Donald B. Koepke, Leyden Township, Cook County, and Martin C. Reed, Lake County, both of Ill., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Oct. 27, 1980, Ser. No. 201,173
Int. Cl.³ G10C *3/12*
U.S. Cl. 84—433 **27 Claims**



1. In an organ key assembly having a key, means for pivotally mounting the key, means for pivotally biasing the key to a normal position, and a membrane switch mounted adjacent the key, an improved actuator means for operating the switch as an incident of pivotal depression of the key from the normal position, said actuator means comprising:

a resiliently deflectible actuator having an end portion loosely secured to the key, a switch actuating portion slidably engaging the membrane switch, and a guide portion intermediate said end portion and switch actuating portion; and

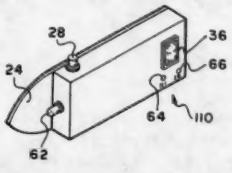
force transfer means on the key for movably engaging the actuator guide portion to adjustably urge the switch actuating portion against the switch to operate the switch as an incident of the key depression, wherein the loose securement of the actuator to the key and the movable engagement of the force transfer means with the actuator guide portion permit self alignment of the switch actuating portion with the switch.

4,365,537

COMBINED PICK AND TUNER

Gary S. Pogoda, 223 N. Douglass Ave., Margate, N.J. 08402

Division of Ser. No. 120,061, Feb. 11, 1980, Pat. No. 4,320,689.
This application Apr. 20, 1981, Ser. No. 255,876
Int. Cl.³ G10G *7/02*
U.S. Cl. 84—454 **13 Claims**



1. In a stringed musical instrument tuning device the improvement comprising:

a housing, said housing being of sufficiently small size so that it can be conveniently held in a person's hand and being intended to be so held when in use,

a manually operable switch means carried by said housing, said switch means controlling an electronic tuner circuit and being conveniently located so as to be operable while said housing is being held,

an audio pickup carried by said housing and being connected to said electronic tuner circuit, said pickup being arranged to receive sounds from a vibrating string of a stringed musical instrument while said housing is being held, and

a pick extending outwardly from one end of said housing, the free end of said pick being thin enough to fit between adjacent strings of a stringed musical instrument for plucking the same, said pick and audio pickup being arranged with respect to each other so that the pick can be used to pluck the string to vibrate the same and the sounds from the vibrating string can then be substantially immediately picked up by said audio pickup.

4,365,538

VACUUM OPERATABLE DIFFERENTIAL SERVO-MOTOR

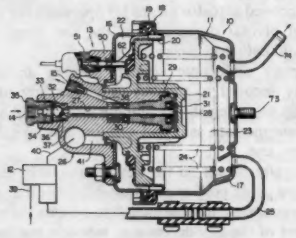
Masamoto Andoh, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Aichi, Japan

Filed Sep. 15, 1980, Ser. No. 187,075

Claims priority, application Japan, Sep. 21, 1979, 54-131728[U]

Int. Cl.³ F01B *25/26*

U.S. Cl. 91—1 **6 Claims**



1. A vacuum operable differential servo-motor for a motor vehicle having an engine intake manifold comprising:

a housing;

a power piston movable within said housing;

first and second chambers positioned in said housing one on each side of said power piston;

means for fluidly connecting said first chamber to said engine intake manifold;

means for controlling a pressure differential between said first and second chambers including an air passage disposed between said first and second chambers and an electromagnetically operable solenoid valve for closing said air passage and admitting air to said second chamber in response to a signal;

a failure sensing switch means for detecting operation of said power piston so as to sense any failure or unusual operation of said power piston;

wherein said failure sensing switch means further comprises a casing disposed outside of said housing;

a stationary terminal member and a movable terminal member engageable with each other

a plunger for abutting said power piston and for operatively connecting said movable terminal member to said power piston in said housing; and

a diaphragm seal member having a peripheral bead and a central portion formed so as to effect minimal resistance against reciprocation of said plunger, said bead being retained between said casing of said switch means and said housing, said central portion of said diaphragm seal member being sealed to said plunger.

4,365,539

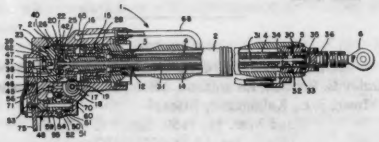
FLUID PRESSURE ACTUATOR WITH STROKE END LOCK MECHANISM

Eugene J. Martin, Portage, and Thomas Rollins, Kalamazoo, both of Mich., assignors to Pneumo Corporation, Boston, Mass.

Filed Feb. 24, 1982, Ser. No. 352,044

Int. Cl.³ F15B *15/26*

U.S. Cl. 92—17 **10 Claims**



1. A fluid actuator comprising a cylinder, a piston axially movable within said cylinder, a member rotatably journaled in said cylinder and operatively connected to said piston such that axial movement of said piston effects and is dependent on rotation of said member, releasable lock means engageable with said member for preventing rotation of said member thereby locking said piston against movement, a fluid pressure operated lock piston movable in a direction to release said lock means, said lock means having a first surface area exposed to the fluid pressure that is applied to said actuator to move said piston after said lock means has been released creating a force tending to move said lock piston in the opposite direction, and said lock piston having a second surface area which is exposed to the same fluid pressure that is applied to the actuator creating a force acting in opposition to the force exerted on said lock means by fluid pressure acting in said first surface area.

4,365,540

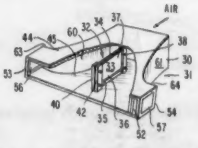
UNDERDASH AIR SWEEP SYSTEM FOR AUTOMOBILES

Juanito Honrado, Oxon Hill, Md., assignor to Bowles Fluidics Corporation, Silver Spring, Md.

Filed Oct. 7, 1980, Ser. No. 194,743

Int. Cl.³ B60H *1/14*

U.S. Cl. 98—2 **6 Claims**



4. In a oscillating member air sweep system in which a flowing air stream is directed upon an oscillator element located in an outlet element, said oscillator element having a free upstream end and a fixed downstream end to cause oscillatory movement of the free upstream end in the flowing air stream, said outlet element having diverging side walls defining the extreme limits between which the air is swept by said oscillator element, the improvement comprising said outlet element having an output element coupled to the downstream end of said diverging side walls, said output element having means for providing an alternative flow path for blocked air flow when air flow through said output element is partially blocked for sustaining oscillation of said oscillation element, said means for providing an alternative flow path including at least one aperture forming means in said output element which is downstream of said oscillator element.

5. The invention defined in claim 4 wherein said air sweep

system is mounted under the dashboard of an automobile and said aperture forming means passes air to under the dashboard of said automobile.

4,365,541

FILTER ARRANGEMENT FOR AN AIR CIRCULATORY SYSTEM

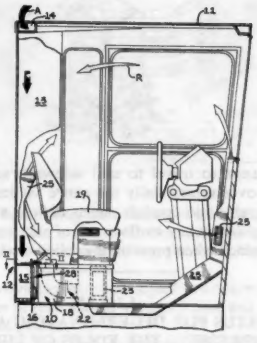
Jerry G. Marques, Decatur, and Robert D. Cruthis, East Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

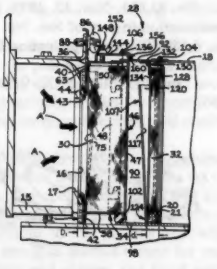
PCT No. PCT/US80/01668, § 371 Date Dec. 12, 1980, § 102(e) Date Dec. 12, 1980, PCT Pub. No. WO82/02086, PCT Pub. Date Jun. 24, 1982

PCT Filed Dec. 12, 1980, Ser. No. 273,872

Int. Cl.³ F24F *3/16*

U.S. Cl. 98—2.11 **17 Claims**





14. A filter assembly (28) for an air circulatory system (10), comprising:

frame means (12) having an air passageway (17,21) defined therein;

first filter means (34);

second filter means (32);

first guide means (64,66) for positioning said first filter means (34) substantially across said air passageway (17,21);

first fastening means (86) for releasably sealingly, retaining said first filter means (34) against said frame means (12) in cooperation with said first guide means (64,66);

second guide means (107,108) for positioning said second filter means (32) substantially across said air passageway (17,21); and

second fastening means (106,130) for releasably, sealingly retaining said second filter means (32) against said frame means (12) in cooperation with said second guide means (107,108) and said first filter means (34).

4,365,542

ELECTRIC FAN

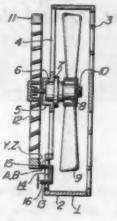
Kenichi Watanabe; Hiroshi Kinoshita; Akira Tatsumi, all of Hitachi, and Koichi Goto, Yamagata, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 17, 1981, Ser. No. 244,677

Claims priority, application Japan, Mar. 17, 1980, 55-33784[U]

Int. Cl.³ F24F *13/08*

U.S. Cl. 98—40 V **5 Claims**



4. An electric fan having a frame, an electric motor attached to said frame, a fan blade unit adapted to be driven by said electric motor, a rotary grille disposed in front of said fan blade unit and provided with a plurality of inclined grille plates, and means for rotatively driving said rotary grille at a low speed, said means for rotatively driving including a small sized reversible synchronous motor, and means for limiting an angular range of rotation of said rotary grille including a plurality of projections formed on said rotary grille at different angular positions, and a stopper mounted on said frame, said stopper having a retainer portion which is movable into and out of a locus of movement of said projections.

4,365,543

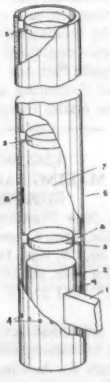
LINING SYSTEM FOR CHIMNEYS AND DUCTS

Maurice R. Baker, 2472 Callum Ave., Mississauga, Ontario, Canada (L5B 2H9)

Filed Sep. 17, 1980, Ser. No. 188,220

Int. Cl.³ F23L *17/02*

U.S. Cl. 98—58 **2 Claims**



1. A method of constructing a chimney or other fluid carrying conduit comprising the steps,

providing an external or structural wall of the chimney or conduit,

providing a layer of air, or inert medium, adjacent to the structural wall and inwardly therefrom, which surrounds the effluent gas or other material being passed through the

system, providing rings having a curved radial section, or approximately so, at intervals to maintain separation of the gas and air.

4,365,544

PREPARATION OF BEVERAGES

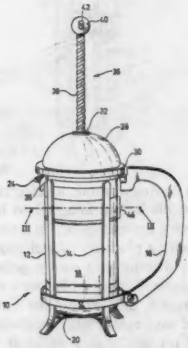
George Howitt, High Lanes, North Dr., Wentworth, Surrey, England

Filed Jan. 16, 1981, Ser. No. 225,745

Claims priority, application United Kingdom, Jan. 22, 1980, 8002141

Int. Cl.³ A47J *31/18*

U.S. Cl. 99—297 8 Claims



1. An apparatus for preparing a beverage by extraction of soluble matter from a generally solid flavouring material into a liquid, said apparatus including a cylinder and a piston assembly, said piston assembly comprising a detachable capsule containing a flavouring material and being constructed in the form of an inverted cup, said capsule having an annular wall, a rim along said wall, a base containing apertures therein, a first disc constructed of filter medium supported on said base, a second disc constructed of filter medium secured to said annular wall rim, said solid flavouring material being retained within said capsule by said first and second filter mediums, and an annular flange constructed and designed so as to be slightly deformed upon insertion into said cylinder to sealingly engage said cylinder, whereby relative axial movement of said piston assembly through liquid contained in said cylinder forces liquid through said capsule first and second filter mediums, the liquid contacting said flavouring material within the capsule and extracting soluble matter therefrom.

4,365,545

APPARATUS FOR MAKING LARGE SIZED BLOCKS OF CHEESE

Wilfred F. Retzlaff, New Franken, Wis., assignor to L. D. Schreiber Cheese Co., Inc., Green Bay, Wis.

Division of Ser. No. 30,119, Apr. 16, 1979, Pat. No. 4,291,064. This application Mar. 30, 1981, Ser. No. 249,090

Int. Cl.³ A01J *25/11, 25/13, 25/15*

U.S. Cl. 99—459 23 Claims

1. An apparatus for manufacturing cheese blocks from cheese curd particles containing whey comprising: a container having two open ends for holding said curd particles, said container adapted to be initially oriented in an upright position with said open ends being at the top and bottom of said container and being defined by sidewalls of said container; receiver means enclosing said bottom open end of said container, said receiver means having perforations for receiving draining whey from said curd particles; conduit means including two spaced apart generally parallel foraminous sidewalls defining a space therebetween, said space being communicating with the perforations in said receiver means, said foraminous sidewalls being of substantially parallel construction throughout their extent in the container and being of sufficient width and height in relation to the container such that the whey has a relatively

short distance to travel to said sidewalls and thus is easily drainable over substantially the entire volume of said cheese curd, whereby said conduit means defines a path to allow a quantity of said whey to flow out of said container into said receiver means when pressure is applied to said curd particles.

4,365,546

APPARATUS FOR DEGERMINATING A KERNEL BY COMPRESSING THE EDGES OF THE KERNEL

R. James Giguere, Kansas City, Mo., assignor to Cereal Enterprisess, Inc., Kansas City, Mo.

Division of Ser. No. 93,611, Nov. 13, 1979, Pat. No. 4,301,183, which is a continuation-in-part of Ser. No. 909,974, May 26, 1978, Pat. No. 4,189,503. This application Oct. 23, 1981, Ser. No. 314,106

Int. Cl.³ B02C *9/02, 9/04*

U.S. Cl. 99—567 2 Claims

1. A machine for degerminating a kernel of grain such as corn having relatively large side surfaces and relatively thin side edges, said machine comprising:

first and second relatively movable members presenting opposed crushing surfaces,

means mounting said members for relative movement with said crushing surfaces of the members generally parallel to one another;

means providing a plurality of corrugations in said crushing surfaces of said members with smoothly rounded ridges and grooves in facing relationship to the corrugations on the opposite surface, said grooves being spaced apart less than the dimension of the kernel between any two of its opposed side edges to provide said crushing force, said ridges being spaced apart a distance at least as great as the distance between said side surface to avoid the application of any crushing forces to said side surfaces;

a kernel placed between said members and caught between the grooves of opposed corrugations is subjected to compressive

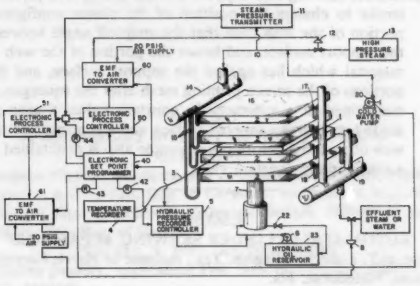
crushing forces applied to the edges thereof and toward the center of the kernel which fracture the endosperm portion of the kernel away from the germ portion.

4,365,547

METHOD AND APPARATUS FOR CONTROLLING A PRESS

George W. McClure, Jr., Cincinnati, Ohio, assignor to Formica Corporation, Wayne, N.J.

Filed Jun. 22, 1981, Ser. No. 275,573
Int. Cl.[3] B30B *15/34*
U.S. Cl. 100—38 5 Claims



1. A method of controlling the pressing of a laminate assembly wherein the assembly is placed between heatable platens of a press which is then closed subjecting the assembly to pressure comprising:

a. continually providing an output signal to a controller from a programmer in response to a desired time and temperature command profile,

b. continually measuring the temperature of the heat transfer medium circulating through the heating elements of the press,

c. continually providing said circulating temperature to said controller,

d. continually determining the conformity of said measured temperature to the programmed temperature of said profile in conjunction with said time of said profile,

e. continually determining a need for a temperature change in the circulating temperature from said conformity determination,

f. continually providing first and second signals, each to one of a pair of relays and a third signal to a heat source from said programmer in accordance with said command profile which third signal energizes first means for introducing heating medium to the platens and which first and second signals energize second means for removing heating medium from said platens and third means for introducing cooling medium to said platens, respectively, and

g. continually controlling the temperature of the heat transfer medium circulating through the heating elements in accordance with said need.

4,365,548

PRESSURE APPLICATION APPARATUS

Werner Pankoke, Bielefeld, Fed. Rep. of Germany, assignor to Firma Theodor Hymmen KG, Bielefeld, Fed. Rep. of Germany

Filed Sep. 15, 1980, Ser. No. 187,559
Claims priority, application Fed. Rep. of Germany, Sep. 20, 1979, 2937972
Int. Cl.[3] B30B *5/06*
U.S. Cl. 100—154 10 Claims

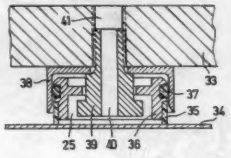
1. An apparatus for applying a surface pressure to progressively moving workpieces comprising:

a plate member having a working surface;

a plurality of pressure members secured to said plate member working surface, each pressure member having a peripheral outer frame defining an open ended pressure chamber;

an inner frame slidably received in each said pressure member outer frame, each inner frame having a peripheral edge;

a sealing strip affixed to and extending from the peripheral edge of each of said inner frames;



an endless pressure belt rotating around said plate member, the belt having a workpiece engaging surface and an opposed surface, the sealing strip affixed to each of said pressure chambers slidably engaging the opposed surface of said belt; and

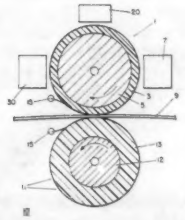
means of applying a pressure medium to each said pressure chamber to thereby force said belt into pressure contact with moving workpieces.

4,365,549

ELECTROSTATIC TRANSFER PRINTING

Richard A. Fotland, Holliston, and Jeffrey J. Carrish, Hopkinton, both of Mass., assignors to Dennison Manufacturing Company, Framingham, Mass.

Continuation-in-part of Ser. No. 969,517, Dec. 14, 1978, Pat. No. 4,267,556, which is a continuation-in-part of Ser. No. 844,913, Oct. 25, 1977, abandoned. This application Jan. 5, 1981, Ser. No. 222,829
Int. Cl.[3] G03G *15/22*
U.S. Cl. 101—1 35 Claims



1. Electrostatic printing apparatus comprising:

an imaging member having a conductive core and a dielectric surface layer;

means for generating ions comprising

control and driver electrodes separated by a dielectric member, and

a varying potential applied between the two electrodes to create a glow discharge;

means for extracting ions from said glow discharge to create a latent electrostatic image on said dielectric surface layer;

means for toning said latent electrostatic image; and

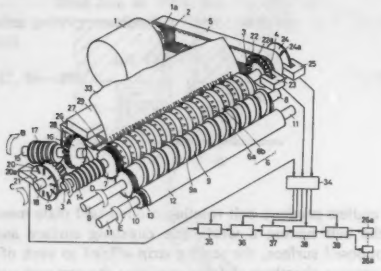
a transfer roller which nips said dielectric surface layer under pressure, with an image receptor fed through the nip.

4,365,550

PRINTING MECHANISM FOR DOT MATRIX PRINTERS

Toshio Kurihara, and Nagao Mizutani, both of Tokorozawa, Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Mar. 23, 1981, Ser. No. 246,183
Claims priority, application Japan, Apr. 11, 1980, 55-47567
Int. Cl.[3] B41J 3/12
U.S. Cl. 101—93.04 7 Claims



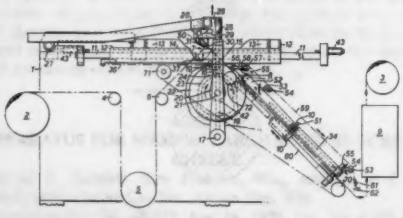
1. A printing mechanism for dot matrix printers comprising a platen, a plurality of cylindrical protrusions helically provided on the periphery of said platen, said protrusions comprising at least two groups which are different in round top surface area, a plurality of hammers arranged in the axial direction of said platen, each of said hammers being supported so as to be moved to said platen and having a hammer head which has an axial length substantially equal to the pitch of helix of said protrusions so as to engage with the tops of said protrusions during rotation of said platen, means for feeding ink to periphery of said helical protrusions, means for rotating said platen, and means for moving said hammers to said platen to engage said protrusions to perform the dot matrix printing.

4,365,551

SCREEN PRINTING APPARATUS

David Horton, Ashford, England, assignor to Letraset Limited, London, England

Filed Aug. 12, 1980, Ser. No. 177,492
Int. Cl.[3] B05C 17/04; B41L 27/00
U.S. Cl. 101—124 4 Claims



1. In screen printing apparatus for printing on web material, a printing station including:

a screen printing mesh attached under tension to a screen frame;

reciprocating means for rectilinearly reciprocating said screen frame with a particular speed;

a squeegee mounted above said screen printing mesh for movement into contact with said screen printing mesh along a line of contact, and out of contact with said screen printing mesh;

means for feeding ink to one side of the squeegee above the mesh;

a profiled support surface positioned opposite said squeegee and below said screen printing mesh for supporting a portion of the web material in a planar configuration which forms a snap-off angle between itself and the screen printing mesh at the line of contact, said screen printing mesh being biased toward said support surface when said squeegee is in contact with it;

conveyor means for moving the web of material to be printed on between said support surface and said screen printing mesh at the location of said squeegee, said conveyor means moving said web of material at the particular speed of said reciprocating means during a printing stroke when said screen printing mesh is biased towards said support surface by said squeegee, the improvement comprising;

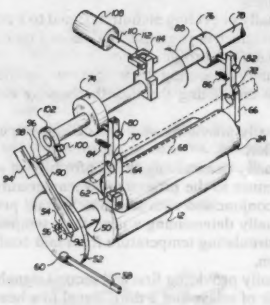
means for moving said support surface during said printing stroke to change the position of the planar configured portion of the web such that the snap-off angle between the support surface, and hence the portion of the web of material which lies against the support surface, and the portions of the screen printing mesh after the squeegee, is maintained at a substantially constant value, a snap-on angle between the support surface and the portion of the web of material before the squeegee also is maintained at a substantially constant value.

4,365,552

AUTOMATIC CYLINDER SKEWING APPARATUS

Vincent T. Kubert, Arlington, Tex., assignor to Harris Corporation, Melbourne, Fla.

Filed May 20, 1980, Ser. No. 151,739
Int. Cl.[3] B41F 7/04, 7/26
U.S. Cl. 101—218 5 Claims



1. A rotary printing press comprising a pair of spaced side frames, a plate cylinder and a blanket cylinder journaled for rotation between said side frames, skew eccentric means mounting an end portion of the plate cylinder for shifting said end portion of the plate cylinder relative to the blanket cylinder upon rotation of said skew eccentric means to thereby skew the plate cylinder by an amount dependent upon the amount of rotation of said skew eccentric means, a form roll located adjacent said plate cylinder and mounted for rotation on an axle, supporting means for supporting said form roll including first and second hangers, each attached to a corresponding end of said axle and each pivotally mounted for swinging movement of the form roll toward and away from the plate cylinder, a shaft disposed generally parallel to the axis of said form roll, first and second cams connected with said shaft for rotation together with said shaft, each of said cams associated with a respective one of said first and second hangers, first and second cam followers for following an associated one of said cams and each of said cam followers being operatively connected to the corresponding one of said pivoting hangers so as to pivot said hanger by an extent which is dependent upon the rotary position of said cam, and a linkage connected between said skew eccentric means and said shaft for

rotating said shaft by an amount dependent upon the amount of rotation of said eccentric, said first and second cams having different profiles and including surface means for moving first and second hangers supporting opposite ends of said form roll relative to one another thereby to skew the form roll by an amount corresponding to the skewing of the plate cylinder, whereby said form roll is automatically skewed in response to skewing of said plate cylinder, and throw off means for rotating said shaft beyond the range of movement controlled by said linkage, said first and second cams including surface means for pivoting each of said cam follower means and its associated hanger upon such rotation of said shaft, to thereby throw off the associated end of said form roll from said plate cylinder.

4,365,553

SINGLE-SHEET ROTARY OFFSET PRINTING MACHINE

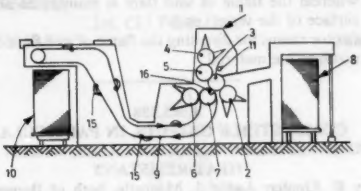
Hermann Fischer, Augsburg, and Johannes M. Schubert, Mainhausen, both of Fed. Rep. of Germany, assignors to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Offenbach am Main, Fed. Rep. of Germany

Filed Oct. 5, 1981, Ser. No. 308,363

Claims priority, application Fed. Rep. of Germany, Oct. 25, 1980, 3040388

Int. Cl.³ B41F *13/24*

U.S. Cl. 101—232 **9 Claims**



1. Rotary offset sheet printing machine for prime and verso printing having

a printing station (1, 13) including

three paired rubber blanket cylinder - plate cylinder combinations (2,3; 4,5; 6, 7), each having a first, second and third rubber blanket cylinder (3, 5, 7);

a transport chain system including a transport chain (9, 9', 14) and gripper means (15) on the chain,

and means for transporting the sheets between the first rubber cylinder (5) and past the third rubber cylinder (7), said first and second rubber cylinders (3, 5) and the second rubber cylinder (5) applying, respectively, verso and prime printing thereon, and the third rubber cylinder (7) applying a second prime printing,

wherein, in accordance with the invention,

the transport chain (9, 9', 14) is carried about the third rubber cylinder (7) applying the second prime printing, and receive sheets from the first rubber cylinder (3) after having the first prime printing and the verso printing applied by the second and first rubber blanket cylinders, respectively, the transport chain leading the sheet over part of the circumference of the third rubber cylinder (7) to thereby have the second prime printing applied, with the first rubber cylinder forming the printing cylinder for the third rubber cylinder,

said transport chain then carrying the sheet out of the printing station (1).

4,365,554

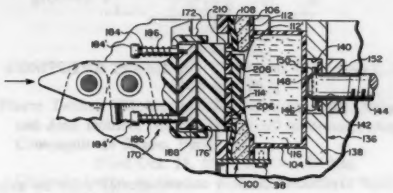
ARTICLE IMPRINTING APPARATUS

Burton L. Siegal, and Jay S. Waxman, both of Skokie, Ill., assignors to Kiwi Coders Corporation, Wheeling, Ill.

Filed Oct. 27, 1980, Ser. No. 200,913

Int. Cl.³ B41K *1/42*

U.S. Cl. 101—333 **18 Claims**



1. In an article imprinting apparatus including imprinting head means carrying type font means for applying an imprint to the surface of an object, the type font means having outwardly facing type face, inking cartridge means having an exposed inking surface adapted to be engaged by said type face means during a rest condition, drive means for translating said imprinting head means between the rest condition and an imprinting position angularly displaced from the inking cartridge means and return and linkage means coupled between said drive means and the imprinting head means for effecting the translation, the improvement comprising said ink cartridge means being mounted immovably in the path of the imprinting head at the rest condition, an outwardly opening cavity in said imprinting head means, type holder means mounted within said cavity, resilient means mounting said type holder means for limited inertial extension of said type holder means outward of said imprinting head means upon abrupt cessation of motion of said imprinting head means at least at the imprinting position, perimetric sealing gasket means secured to said type holder arranged to engage said inking cartridge for establishing a sealed engagement therewith preventing evaporation of the ink therefrom during the rest condition of the imprinting head means, said resilient perimetric sealing gasket means having a bearing face arranged to extend a predetermined distance spaced from the end face level of the type font means to hold same against the surface of the object during momentary impact thereon of said type font means controlling the said impact, and further to self-compensate for surface mis-orientation and irregularities relative thereto assuring proper imprint.

4,365,555

EXPLOSIVE PRIMING DEVICE

Giovanni Galluzzi, Lecco, and Giulio Fiocchi, Milan, both of Italy, assignors to BERFI S.p.A., Milan, Italy

Filed Jul. 2, 1980, Ser. No. 165,367

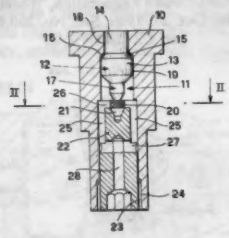
Claims priority, application Italy, Jul. 4, 1979, 24094 A/79

Int. Cl.³ F42C *19/10*

U.S. Cl. 102—204 **5 Claims**

1. Explosive priming device, comprising a pill of explosive material, which covers the open end of a frusto-conical, blind bottomed explosion chamber, and a percussion pin adapted to strike said pill at the side opposite with respect to said explosion chamber, including a casing having a through hole, said percussion pin being slidably located at one end of said through hole, without possibility of coming out therefrom, a die member removably mounted at the other end of said through hole, said explosion chamber being formed in the end of said die

member which is more internal with respect to said through hole, and said die member being provided with channels by



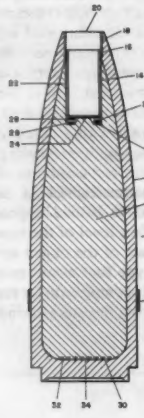
which said explosion chamber communicates with an axial duct, formed in said die member and leading outwardly.

4,365,556

METHOD AND SYSTEM FOR PREVENTING BASE SEPARATION OF CAST EXPLOSIVES IN PROJECTILES

Paul F. Reibel, Sparta, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 6, 1980, Ser. No. 194,314
Int. Cl.³ F42B *1/02*
U.S. Cl. 102—307 **13 Claims**



1. A projectile comprising in combination:
a metal casing having a closed base end and a forward end having a threaded central opening;
a cast explosive charge filling said casing, said charge having a longitudinal cylindrical cavity at its forward end to receive a fuzewell liner for containing a fuze for detonating said charge,
a fuzewell liner positioned in said cavity and threadedly secured to said casing at said threaded opening; and
a resilient means compressed between the bottom of said cavity and the bottom of said liner, wherein said compressed resilient means presses against said liner and said cast explosive with a force sufficient to prevent or greatly minimize separation of said cast explosive from the base end of said casing in response to thermal contraction or expansion of said cast.

4,365,557

AIR DEPLOYABLE INCENDIARY DEVICE

Joseph E. G. Couture, Cap Rouge, and Philip A. Twardawa, Shannon, both of Canada, assignors to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Ottawa, Canada

Filed Sep. 22, 1980, Ser. No. 189,854
Claims priority, application Canada, Jun. 3, 1980, 353323
Int. Cl.³ F42B *25/14, 4/26*
U.S. Cl. 102—341 **25 Claims**

1. A floating incendiary device for igniting a combustible material on the surface of a body of water, comprising:
a casing;
flare means disposed in said casing;
firing means for igniting said flare means;
flotation means associated with said casing to maintain the device in a substantially upright position on the water, wherein the flame of said flare is maintained above the surface of the water; and
deflector means for directing the flame of said flare onto said combustible material.

4,365,558

COMBUSTIBLE OBJECTS, IN PARTICULAR COMBUSTIBLE CARTRIDGE CASES, WHICH ARE HEAT-RESISTANT

Remy R. Lippler; Andre J. Mengelle, both of Bergerac, and Jacques Plazanet, Mouleydier, all of France, assignors to Societe Nationale des Poudres et Explosifs, Paris, France

Filed Dec. 7, 1979, Ser. No. 101,201
Claims priority, application France, Dec. 15, 1978, 78 35345; Sep. 19, 1979, 79 23367
Int. Cl.³ F42B *5/26*
U.S. Cl. 102—431 **13 Claims**

1. A heat-resistant combustible object which is covered with a thin layer of varnish, which object exhibits delayed self-ignition in the temperature range of 200°–300° C., said varnish containing hollow microspheres, said varnish comprising as the basic ingredient an organic binder which consists of a polymer, which is a chlorinated rubber, polyvinylidene chloride, a cellulosic binder, a glycerophthalic binder, a polyurethane resin or a polyepoxy resin, the thickness of the layer of said varnish being neglegible when compared with the thickness of said combustible object.

4,365,559

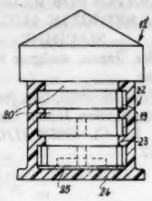
MUNITION ROUND FOR FIREARMS

Eric Gruaz, 4, avenue Marechal Foche, Lyon 6eme, France

Filed Apr. 16, 1980, Ser. No. 140,826
Claims priority, application France, Apr. 17, 1979, 79 10417
Int. Cl.³ F42B *11/00*
U.S. Cl. 102—439 **3 Claims**

1. A cartridge for a firearm comprising:
a bullet having a head and a shank extending axially from said head, said shank being formed with at least one axially extending groove and a plurality of circumferential grooves having a given depth;

a casing of synthetic material receiving said shank and provided with a plurality of internally projecting annular ribs of a number equal to the number of said circumferential grooves and received therein, the said ribs extending into said circumferential grooves a distance less than said given



depth, bullet and the casing defining a space at the bottom of said casing which is vented to the ambient atmosphere through said axial groove which extends from said space to said plurality of circumferential grooves; and

an explosive charge received in said space and adapted to be introduced into said casing in a moist state.

4,365,560

FIN-STABILIZED PROJECTILE

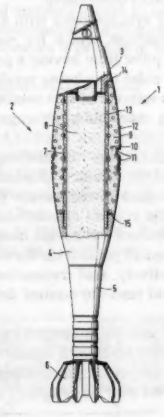
Amos Frostig, Haifa, Israel, assignor to Etablissement Salgad, Vaduz/Liechtenstein, Fed. Rep. of Germany

Filed Sep. 8, 1980, Ser. No. 185,042

Claims priority, application Fed. Rep. of Germany, Sep. 11, 1979, 7925652[U]

Int. Cl.³ F42B *13/02*

U.S. Cl. 102—477 **2 Claims**



1. A fin-stabilized projectile for firing from the barrel of a firearm, said projectile comprising:

(a) an ogival projectile body having a nose portion and a base portion, a tail tube connected to said body and having a finned tail unit,

(b) said nose and base portions being rigidly connected at respective ends of an internal connecting tube made of steel,

(c) a charge portion including a bursting charge disposed around the steel internal tube and being composed of a rigid plastic material which forms a matrix in which shrapnel fragments are imbedded,

(d) said bursting charge forming the ogival projectile body shape with the outer surface thereof being of a diameter which may contact the inner wall of the barrel of the firearm from which the projectile is being fired,

(e) said steel internal tube having undercut annular grooves with radially extending surfaces and being disposed on the total external surface thereof and along the length of said bursting charge containing the shrapnel fragments,

(f) said rigid plastic material filling said undercut annular grooves.

4,365,561

COMPUTER TERMINAL STATION FOR DATA INPUT AND OUTPUT

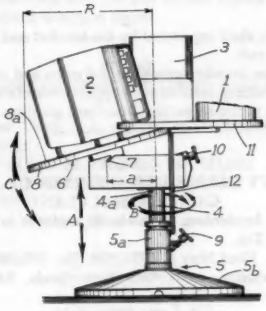
Pierre Tellier, Villevaude; Jean-Pierre Demaille, Saint Maur, and Jean Doillon, Montry, Esbly, all of France, assignors to Compagnie du Roneo, Paris, France

Filed Oct. 11, 1979, Ser. No. 83,586

Claims priority, application France, Oct. 12, 1978, 78 29159; Jan. 15, 1979, 79 00902

Int. Cl.³ A47F *5/12*; A47B *9/08, 11/00*

U.S. Cl. 108—7 **12 Claims**



1. A terminal station for the input and output of data issued from and directed to a central processor, such as a computer for example, constituted by a hand-operated input device of the keyboard type and by an output device which the operator can read over, the input and output devices being separate one from the other, comprising a vertically stationary support for the said input device and a support for the said output device, wherein the support for the said output device comprises a platform connected to a mechanism for adjusting its height and its inclination, which mechanism is mounted for rotation about a vertical axis in a lower base with means for immobilizing it in rotation in said base, the main part of said platform being excentered in a horizontal projection with respect to said vertical axis and wherein: the support for the said input device comprises a jamb, fast with a part of the said mechanism which is only rotatable with respect to the said base, shaped at its upper part into a console supporting a horizontal panel cut so as to surround at least part of the said platform and to be substantially inscribed in a circle centered on said vertical axis and surrounding the support for the output device.

4,365,562

SUPPORT ASSEMBLY

William M. Webb, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Oct. 3, 1980, Ser. No. 193,683

Int. Cl.³ A47B *9/00*

U.S. Cl. 108—108 **9 Claims**

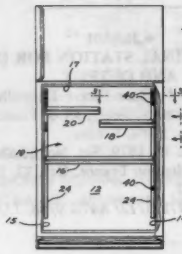
1. A support assembly for an inside corner formed by a vertical rear wall and a vertical side wall intersecting each other at a right angle comprising:

a single elongated vertical track secured to one of the walls in close proximity to the inside corner;

a shelf assembly for securement to only the single track including,

a bracket having a forward portion and a rearward portion, said rearward portion having means for removable securement to the track,

a support member having a forward portion and a rearward portion and horizontally spaced from the bracket,



a planar shelf supported by the bracket and support member; and

a torsion member extending between and at a right angle to both the bracket and support member and secured to each at the respective rearward portions thereof.

4,365,563

SAFETY DEVICE FOR A BURNER OF A COAL GASIFICATION PLANT

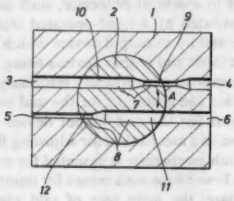
Hsi L. Wu, Amsterdam, Netherlands, assignor to Shell Oil Co., Houston, Tex.

Filed May 4, 1981, Ser. No. 259,888

Claims priority, application Netherlands, May 29, 1980, 8003093

Int. Cl.³ F23N *5/18*

U.S. Cl. 110—186 **5 Claims**



1. A safety device for preventing blockages of significant duration in the flowing of a mixture of coal particles and fluid through the safety device and into a burner, comprising:

a housing which contains a movable element inside its wall;

in the wall of the housing, coal fluid inlet and outlet ports for flowing a mixture of coal particles and fluid into and out of the housing, and cleaning fluid inlet and outlet ports for flowing a blockage-removing fluid into and out of the housing;

within the movable element inside the housing, at least two internal channels, with each internal channel having both a narrow portion and a wide portion; and,

an arrangement of said coal fluid and cleaning fluid ports and said internal channels such that the movable element can be moved into (a) a first position in which one internal channel forms a flow path between the coal fluid inlet and outlet ports, with the wide portion of that internal channel upstream of the narrow portion, while another internal channel forms a flow path between the cleaning fluid inlet and outlet ports, with the wide portion of that channel downstream of the narrow portion, and (b) a second position in which one internal channel that was previously connected between the coal fluid ports with its wide portion upstream is now connected between the cleaning fluid ports with its wide portion downstream.

4,365,564

DRIVING APPARATUS FOR RETAINING FRAME OF OBJECT TO BE SEWED IN AUTOMATIC SEWING MACHINE

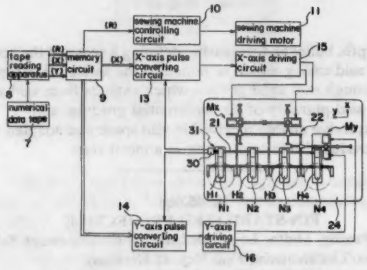
Jin Sugiyama, Osaka, Japan, assignor to Unitech Engineering Ltd., Osaka, Japan

Filed Jun. 18, 1980, Ser. No. 160,742

Claims priority, application Japan, Jun. 19, 1979, 54-77075

Int. Cl.³ D05B *21/00*

U.S. Cl. 112—121.12 **6 Claims**



1. A driving control apparatus in an automatic sewing machine for a pattern controlled displacement of a sewing object frame in both X- and Y-directions by means of respective X and Y stepping motors comprising:

a pulse generator synchronized with a needle drive shaft of said sewing machine, which for each needle cycle produces a clock pulse train having a predetermined number of pulses, said pulse train being produced over a predetermined angular interval of said needle shaft when a needle of said sewing machine is not engaging an object to be sewed;

read-out means for reading controlling data corresponding to the value of the X and Y-displacements for said each needle cycle from a stored pattern program;

and a pair of pulse control circuit means for transmitting a portion of each clock pulse train from said pulse generator for use as a control pulse train for said X and Y stepping motors, respectively, said transmitted portion being proportional to said read-out control data from said read-out means;

wherein each of said pulse control circuit means produces said control pulse train with substantially the same duration as that of said clock pulse train by suppressing clock pulses distributed over the length of said clock pulse train.

4,365,565

CONTROL APPARATUS FOR AUTOMATIC EMBROIDERY SEWING MACHINE

Taneichi Kawai; Koji Nishida, both of Anjo; Osamu Miyake, Toyota, and Shigemitsu Hamajima, Oobu, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Aichi, Japan

Filed Nov. 4, 1980, Ser. No. 204,052

Claims priority, application Japan, Nov. 7, 1979, 54-144899; Nov. 29, 1979, 54-165288

Int. Cl.³ D05C *9/06*; D05B *21/00*

U.S. Cl. 112—103 **18 Claims**

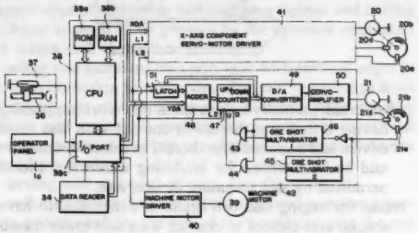
1. A control apparatus for embroidery sewing machine which sequentially reads out embroidery frame driving data of each stitch for embroidery sewing stored in a memory means, and actuates an embroidery frame-supporting/driving means

in x- and y-axis directions synchronized with operation of a sewing machine through two controlled servomotors on each stitch, thereby controlling feed of a base cloth spanned on the embroidery frame stitchingly drawing a locus of a plane figure; wherein the improvement comprises:

two direct current servomotors as said two servomotors;

means for producing a feed back pulse signal according to a rotation angle in a respective rotation sense by way of coding each rotation sense and angle of each servomotor output shaft;

an up/down counter which registers a preset x- or y-axis driving data through an adder, yields a servo control



signal for each of said servomotors according to the preset data, and counts up or down toward making the preset data zero according to said feed back pulse signal resulting in a residual data if the servomotor is incompletely actuated;

means for correction by superposing said x- or y-axis driving data for a next stitch with the residual data by temporally memorizing the residual data slightly preceding a timing whereat said x- or y- axis driving data for the next stitch is supplied from said memory means to said adder;

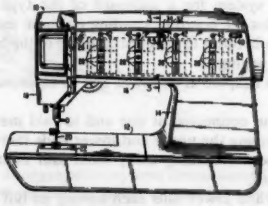
wherein integral accumulation of errors on incomplete actuation of each servomotor is capable of being eliminated or reduced.

4,365,566

SWITCH PATTERN SELECTION AND INFORMATIONAL DISPLAY ARRANGEMENT FOR A MULTIPLE PATTERN SEWING MACHINE

Manfred R. Laidig, Whippany, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Jun. 1, 1981, Ser. No. 268,950
Int. Cl.³ D05B *3/02*
U.S. Cl. 112—158 F **5 Claims**



1. A stitch pattern selection and informational display arrangement for use in an electronically controlled multiple pattern sewing machine comprising:

a graphics element having thereon a plurality of stitch pattern indicia arranged in groups and a plurality of sets of informational indicia, each of said sets of informational indicia being associated with a respective stitch pattern indicium, said graphics element comprising a card having the stitch pattern and informational indicia printed thereon, said card being slidably mounted for back and forth sliding motion;

means for masking said graphics element to make visible at any time only the stitch pattern indicia from one of said groups and the corresponding sets of informational indicia, said masking means including a fixed opaque element with a plurality of optically transparent window regions;

operator influenced shifting means for relatively positioning said masking means with respect to said graphics element so as to selectively make visible a desired group of said stitch pattern indicia and the corresponding sets of informational indicia, said shifting means including a tab member extending outwardly from said card to a region where its position can be influenced by an operator;

first switching means responsive to the position of said shifting means for providing a first signal corresponding to the visible group of said stitch pattern indicia;

operator actuable second switching means for providing a second signal indicative of a selected one of said stitch patterns indicia within said visible group; and

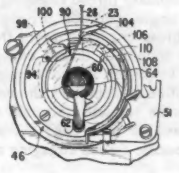
means for combining said first and second signals to provide a stitch pattern selection signal.

4,365,567

MODIFIED THREAD CONTROL LEVER FOR A BOBBIN CASE

Ludwig J. Kuhar, Clark, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Jun. 30, 1978, Ser. No. 921,033
Int. Cl.³ D05B *57/14, 59/00*
U.S. Cl. 112—184 **3 Claims**



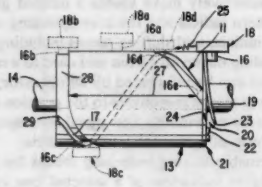
1. A bobbin case for a lockstitch sewing machine having stitch forming instrumentalities including a needle and a loop taker, actuating means interconnecting said needle and loop taker for interrelated movement as is required for the formation of lock stitches, a bobbin case, said loop taker having a cavity formed therein for receiving said bobbin case, means for restraining said bobbin case from rotation with said loop taker, said loop taker having a wall defining its periphery and containing a bearing rib formed along an inner surface of said wall, said bobbin case having a wall defining its periphery, said bobbin case wall containing an annular raceway, said bearing rib of said loop taker being received by said annular raceway of said bobbin case for supporting said bobbin case within said cavity of said loop taker, a gap formed in said wall of said bobbin case, a thread control lever bridging said gap in said wall, said wall of said bobbin case further having a race and a race extension formed therein, said race pivotally receiving one extremity of said thread control lever for arcuate motion toward and away from said wall of said bobbin case, said thread control lever having an arcuately formed thread engaging shoe at an extremity opposite the pivoted extremity for engaging wraps of thread contained on said bobbin, and an oblique surface at the thread engaging shoe extremity of said thread control lever, said oblique surface forming an obtuse angle with said wall of said bobbin case, whereby a bobbin containing a supply of bobbin thread may reside in said bobbin case with said bobbin thread passing over said thread control lever to a point where a lockstitch is formed.

4,365,568

UNDERBED THREAD TRIMMER AND CONTROLLED SINGLE-OPERATION CAM MECHANISM THEREFOR

Roger J. Ross, Mont St-Gregoire, Canada, assignor to The Singer Company, Stamford, Conn.

Filed May 15, 1980, Ser. No. 150,254
Int. Cl.³ D05B 65/00
U.S. Cl. 112—291 **19 Claims**



1. An underbed thread trimmer in a sewing machine comprising a bed, a needle reciprocatingly driven along a path toward and away from the bed, a needle thread carried by the needle, looptaker means supported in the bed for seizing a loop of needle thread shed by the needle, the looptaker means containing a quantity of looptaker thread for concatenation with the needle thread to form stitches, and driving means for driving the looptaker in synchronism with the reciprocation of the needle, the underbed thread trimmer comprising:

looptaker thread engaging means movable between a retracted position and a looptaker thread engaging position;

needle thread engaging means movable between a retracted position and a needle thread engaging position spaced from the looptaker thread engaging position;

controllable, single-operation driving means to drive the looptaker thread engaging means from its retracted position to the looptaker thread engaging position and to return the looptaker thread engaging means to its retracted position and to drive the needle thread engaging means from its retracted position to the needle thread engaging position to engage the needle thread and to return the needle thread engaging means to its retracted position;

a first ledger blade located in the path of movement of the looptaker thread engaging means from the looptaker thread engaging position to the retracted position of the looptaker thread engaging means to sever the looptaker thread; and,

a second ledger blade located in the path of movement of the needle thread engaging means between the needle thread engaging location and the retracted position of the needle thread engaging means to sever the needle thread at a point remote from the reciprocating path of the needle.

4,365,569

FEED REGULATOR CLAMP

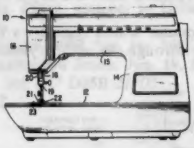
Kenneth D. Adams, Madison, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Oct. 6, 1980, Ser. No. 194,706
Int. Cl.³ D05B 27/22
U.S. Cl. 112—315 **4 Claims**

1. A work feed system for a sewing machine having a frame including a work supporting bed housing said feed system, a throat plate carried by said work supporting bed and having a feed dog accommodating slot therein, said feed system including a feed dog having a work supporting rib arranged in said feed dog accommodating slot of said throat plate, a feed shaft, a feed lift cam supported on said feed shaft for alternately raising and lowering said feed dog to and from a work advancing position with said work supporting rib extending through said feed dog accommodating slot, a feed regulator shaft, a regulator affixed to said feed regulator shaft for selectively varying the direction and rate of work advance movement, means for rotating said regulator shaft for selective variation of the direction and rate of said work advance movement, the improvement comprising

a radially functioning camming device on said feed shaft operating in synchronism with said feed lift cam;

a brake member affixed to said feed regulator shaft;



a bell crank pivotally supported in said work supporting bed having a first arm thereof in contact with said camming device and a second arm thereof in selective contact with said brake member for inhibiting movement thereof as permitted by said camming device; and,

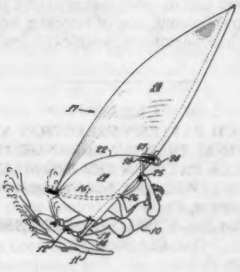
means for urging said bell crank in a direction to have the second arm thereof in contact with said brake member.

4,365,570

SAIL SYSTEM FOR SAILBOARDS

Robert S. Jamieson, 667 S. Hudson, Pasadena, Calif. 91106

Continuation-in-part of Ser. No. 289,386, Aug. 3, 1981. This application Sep. 21, 1981, Ser. No. 304,113
Int. Cl.³ B63H 9/06
U.S. Cl. 114—39 **53 Claims**



1. A sail system for a sailboard of the type in which an operator rides the board in standing position, and manipulates a sail system in order to effect propulsion of the board, said sail system comprising:

(a) a mast adapted at its lower end to be mounted on a sailboard,

(b) a boom connected at one end to said mast at a region intermediate the upper and lower ends thereof,

said boom extending away from said mast transversely thereof,

(c) upper and lower sails each having its luff connected to said mast and its leech connected to said boom at the end of said boom remote from said mast,

said upper sail being generally above said boom, said lower sail being generally below said boom,

said sails and boom being such that said boom may be grasped by the operator regardless of which side of said sails said operator is standing on, and

(d) means to effect a lapped, sealing relationship between the lower edge of said upper sail and the upper edge of said lower sail,

said sealing relationship being such that said lower edge of

said upper sail is, regardless of the tack said sailboard is on, on the upwind side of said upper edge of said lower sail,

said sail system being such that said sails operate like a single sail which is aerodynamically unconstrained by any boom and therefore assumes a single efficient sailing shape characterized by the absence of a crease,

said sail system being further characterized by the absence of substantial leakage of air between said sails, which leakage would reduce the efficiency of the sail system.

21. A method of sailing a sailboard, which comprises:

(a) providing a sailboard having upper and lower sail portions, the lower edge of said upper sail portion and the upper edge of said lower portion being lapped, and having a boom adapted to be grasped by the operator regardless of which tack the sailboard is on,

(b) sailing said sailboard on a port tack with said sail edges in such relationship to each other that said lower edge is on the port side of said upper edge whereby wind moving down said upper sail portion flows onto said lower sail portion without passing in substantial amount between said lapped edges,

(c) turning said sailboard to port, into the wind,

(d) walking around the mast of said sailboard and also grasping said boom from the side of the board opposite the one said boom was originally grasped from, and

(e) reversing the lapped relationship of said edges whereby the lower edge of said upper sail portion is on the starbard side of said upper edge of said lower sail portion, and

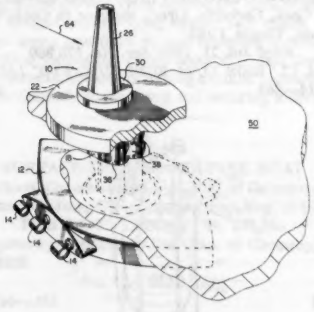
(f) sailing said boat on the starbord tack whereby wind moving down said upper sail portion flows onto said lower sail portion without passing in substantial amount between said lapped edges.

4,365,571

ICE DISAGGREGATION SYSTEM

George W. Morgan, La Jolla, Calif., assignor to Suncor Inc., Toronto, Canada

Filed Sep. 7, 1978, Ser. No. 940,247
Int. Cl.³ B63B *35/08*
U.S. Cl. 114—42 **3 Claims**



1. In an ice disaggregation system characterized by at least one rotating drum, which drum carries ice engaging teeth structure on the peripheral surface thereof, the improvement comprising:

(A) a plurality of tooth supporting brackets distributed about and affixed to the peripheral surface of the drum, each of said brackets including an elongated tooth carrying beam portion disposed generally parallel to the drum peripheral surface and rigidly supported outwardly therefrom by a plurality of bracket legs; and

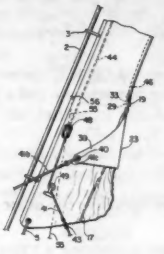
(B) a plurality of ice engaging teeth fixed to said bracket beam portion, each of said teeth having a sharp, ice engaging forward portion, said teeth being oriented such that the forward portions thereof generally face the direction of drum rotation.

4,365,572

WORKING SAILS AND METHODS FOR FURLING THEM WHILE ALOFT

William H. Stevenson, IV, Travelers Rest, Rte. 5, Box 532, Easton, Md. 21601

Filed Mar. 2, 1981, Ser. No. 239,471
Int. Cl.³ B63H *9/10*
U.S. Cl. 114—104 **26 Claims**



1. The method for furling a working sail while the sail is aloft on a sailboat having a cockpit, comprising

providing flexible sheet material along the sail from head to foot;

positioning a travelling furler at the head and engaged over the leech with the furler having connected thereto furling line means and unfurling line means;

interconnecting the ends of the furling line means and unfurling line means most distant from the furler;

pulling the furling line means to cause the travelling furler to move downwardly and progressively furl the sail from leech to luff and form the flexible sheet material into a tubular bag enclosing the furled sail substantially from head to foot;

and simultaneously causing the unfurling line means and a portion of the furling line means to be pulled into stowed positions in which the line means extend lengthwise of and within the tubular bag.

4,365,573

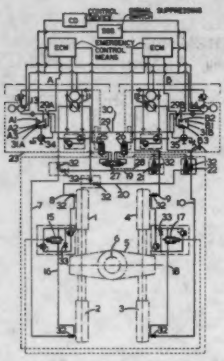
STEERING GEAR FOR SHIPS

John R. Jamieson, Largs, Scotland, assignor to Vickers Limited, London, England

Filed Jun. 16, 1980, Ser. No. 159,627
Claims priority, application United Kingdom, Jun. 22, 1979, 7921854
Int. Cl.³ B63H *25/22*
U.S. Cl. 114—150 **12 Claims**

1. A steering gear incorporating two liquid-operated thruster units each arranged to provide power movements alternatively in opposite rotational direction to a steering member, two pumps, two liquid supply tanks one for each pump, two pipe systems each containing a pump and a thruster unit, a liquid-conducting connection between the two pipe systems, an isolating valve device operable to close the liquid-conducting connection to isolate the pipe systems from one another, two two-level liquid detecting devices one in each tank, each arranged to detect and issue separate consecutive signals when the liquid level in the associated tank drops to a first lower level and then a second lower level and emergency control means arranged to be operative to close the isolating valve device when a liquid-detecting device operates to signal that the first lower level has been reached in the associated tank and also to be operative to control the pumps so that when a liquid-

level detecting device signals that the second lower level has been reached in a tank to render inoperative the pump fed from



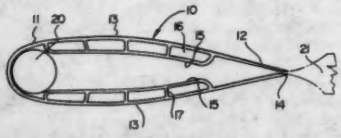
that tank and to render operative the other pump if it is not already operative.

4,365,574

ONE-PIECE SNAP-ON FOIL-SHAPED LOW-DRAG FAIRING FOR LONG UNDERWATER CABLES

Robert S. Norminton, Niagara Falls, Canada, assignor to Fleet Industries, Ontario, Canada

Filed Jun. 5, 1981, Ser. No. 270,881
Claims priority, application Canada, Jun. 23, 1980, 354637
Int. Cl.³ F15D *1/10*
U.S. Cl. 114—243 **9 Claims**



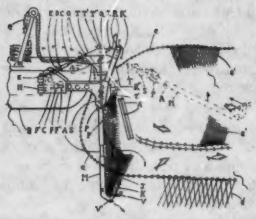
1. A finite length monolithic one-piece, snap-on, foil-shaped low drag fairing element of streamlined hydrodynamic shape, having an outer wall formed of high strength material, the fairing being symmetrical about its central longitudinal axis, and adapted to be associated with a plurality of similar such fairing elements in end-to-end abutting relation on a cable, said fairing element comprising: a hollow rounded nose portion within which said cable is adapted to be disposed; a spring tail portion provided by a slit in the tail thereof along the central longitudinal axis; a hollow expandible channel symmetrical about said central longitudinal axis interconnecting said spring tail portion and said hollow nose portion, and through which said cable is adapted to be urged from its entry at said tail portion to its lodging at said hollow rounded nose portion; and an inner wall section of said high strength material spaced from said outer wall of said substantially hollow fairing element by a plurality of ribs of said high strength material, thereby defining said hollow expandible channel and also a double wall section along the flanks of said fairing element between said nose portion and said tail portion.

4,365,575

MARINE SCOOPERS FOR PORPOISES AND TUNA - PORPOISE-ESCAPE-WAY

Frank Cicero, 3948 5th Ave. #17, San Diego, Calif. 92103

Continuation-in-part of Ser. No. 868,115, Jan. 9, 1978, abandoned, and Ser. No. 792,121, Apr. 29, 1977, abandoned. This application Dec. 20, 1979, Ser. No. 105,539
Int. Cl.³ B63B *35/14*
U.S. Cl. 114—255 **13 Claims**



11. In a scoop net equipped marine vehicle or boat or barge including: a pair of arms or limbs pivotally carried by the boat sides: arm or limb extensions slidably mounted over said arms; a net extended between the arm extensions and adapted to bag fish and porpoises by activation of the extensions and by pivoting of the arms.

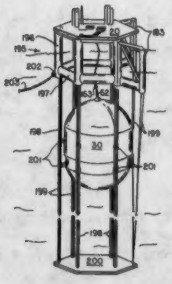
12. In a seine enclosure having a cork-line open and a closed bottom and wherein fish and mammals may be captured: a number of weights adapted to be hung on the cork-line and to sink a portion thereof; a tube attached by one end to the deck and by the other to the bottom of each one of a pair chase boats; cord pulling means attached to the weights and inserted thru said tube upwardly from the bottom to prevent overtuning when the chase boats lift up the weights by pulling in opposite direction of each other.

4,365,576

OFFSHORE SUBMARINE STORAGE FACILITY FOR HIGHLY CHILLED LIQUIFIED GASES

Sidney F. Cook, Corvallis, Oreg., assignor to Cook, Stolowitz and Frame, Visalia, Calif.

Filed Jul. 21, 1980, Ser. No. 170,800
Int. Cl.³ B63B *35/44*; E02B *17/00*; F17C *1/12*
U.S. Cl. 114—265 **15 Claims**



1. In an offshore submarine storage facility in the ocean and the like for liquified energy gases and similar liquid materials at cryogenic temperatures which includes a vertically compressible insulated submarine storage tank positionable at various selected depths in the water for storing said liquid materials, said tank including ambient water pressure transfer means for transferring external ambient water pressures available at a selected depth to the liquified material stored therein without

intermixture of water and liquified material to aid maintaining its liquid state, an improvement comprising:

frame means surrounding said tank and to which said tank is slidably attached, for anchoring said tank in place in the ocean and for enabling said tank to be positioned at said selected depths, said frame means including openable gate means therein, adjacent the surface of the ocean, for enabling said tank to be installed in and removed from said frame means, while said tank is floating at the surface of the ocean.

4,365,577

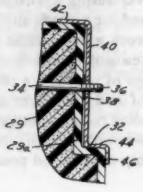
FLOAT MODULE COMBINATION

Edgar W. Heinrich, 23352 Lowrie Dr., Grosse Ile, Mich. 48138

Continuation-in-part of Ser. No. 827,940, Aug. 26, 1977, abandoned. This application Dec. 8, 1980, Ser. No. 214,028

Int. Cl.³ B63B *35/34, 35/38*

U.S. Cl. 114—267 **2 Claims**



1. A float module for construction of pier assemblies, floating platforms and the like which comprises:

(a) a structure having high buoyancy, weather-resistant, and waterproof characteristics,

(b) a structural recess formed along parallel edges of said structure open at the top and ends to provide a bench extending along the sides of said structure parallel to and spaced downwardly from the top,

(c) fastening means embedded in said structure having portions extending into said recess above said bench, and adapted to transfix and lock to a structural element lying in said recess,

(d) a structural element in the form of a flanged metal plate having a first portion lying against the back of said recess and a flanged portion lying against said bench, said first portion being transfixed by said fastening means, and

(e) a vertical supporting gusset secured to said first portion of said structural element having a saddle recess on the top portion thereof for receiving and securing a dredge pipe.

4,365,578

SURFACE-EFFECT AEROFOIL BOAT

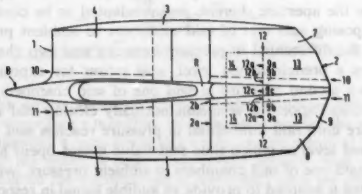
Rolf Schellhaas, Grossbieberau, Fed. Rep. of Germany, assignor to Gunther W. Jorg, Grossbieberau, Fed. Rep. of Germany

Filed Jul. 25, 1980, Ser. No. 172,241

Claims priority, application Fed. Rep. of Germany, Jul. 31, 1979, 2931020

Int. Cl.³ B63B *1/16*

U.S. Cl. 114—272 **13 Claims**



1. In a surface-effect aerofoil boat having a body, noise portion, tail portion, central axis through the length of said body, front and rear tandemly arranged aerofoils attached to said body, a vertical fin, a pivotally attached aerodynamic rudder, and a driven propeller mounted for rotation on a propeller axis which is oriented in the general direction of said central axis, the improvement comprising:

means for subdividing said boat to provide hollow compartments at the stern, at least one of said compartments providing a flotation compartment for said boat;

means for trimming said boat by flooding and emptying at least a portion of said compartment of said boat with ballast water from a body of water on which said boat is floatable such that pitching-under of the bow of said boat is avoided during take-off and the angle of attack and lift of at least one of said aerofoils is optimized relative to a surface of said body of water for lift-off of said boat clear of said surface;

means for increasing lift and decreasing drag of said tail portion along a line of contact of an underside of said tail portion with the surface of said body of water during take-off; and

a gap between said fin and said rudder, said propeller rotating through said gap, and means for reducing the noise generated by rotation of said propeller through said gap.

4,365,579

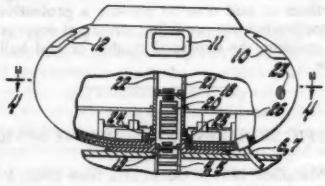
SURVIVAL CAPSULE MODULE AND METHODS OF CONSTRUCTING AND UTILIZING

Lorenzo Perez, Jr., P.O. Box 446, Sault Ste. Marie, Mich. 49783

Continuation of Ser. No. 923,164, Jul. 10, 1978, abandoned. This application May 22, 1980, Ser. No. 152,519

Int. Cl.³ B63C *9/02*

U.S. Cl. 114—349 **6 Claims**



1. A buoyant survival capsule for a ship, comprising:

a buoyant survival capsule body having a substantially oblate spheroidal shape;

said body having an inner hull and an outer hull disposed in a fixed; spaced-apart, and substantially coextensive predetermined relationship;

first means for supporting said buoyant survival capsule body on a deck of said ship;

said first means including a tapered annular hollow conical frustrum body firmly attachable to the deck of said ship over a hatch in said deck;

second means for providing direct access from the interior of the ship to the interior of said buoyant survival capsule body comprising a second hollow conical member closely receiving and abutting said first means annular conical frustrum body and extending inwardly and upwardly therefrom to a position above said first means, and said second means including a hatch chamber received within said second means conical member and forming an upwardly extending continuation of said first means conical body and said second means second conical member with said hatch chamber forming a hollow continuation of the hollow portion of said first means;

said hatch chamber extending a substantial distance upwardly into said capsule body and a substantial distance above said first means;

a ladder within said hatch chamber extending from substantially the bottom to the top thereof;

a hatch adjacent the upper end of said hatch chamber for closing the latter.

4,365,580

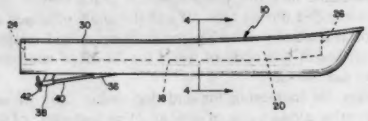
HULL CONSTRUCTION

Luther H. Blount, 1 Shipyard La., Warren, R.I. 02885

Filed Apr. 13, 1981, Ser. No. 254,585

Int. Cl.³ B63B 5/24

U.S. Cl. 114—356 17 Claims



1. A hull construction for a marine vessel and the like comprising:

(a) a metallic inner hull structure of box-like configuration having an elongated bottom wall and upstanding side walls, said inner hull structure being of sufficient rigidity to provide substantially the sole load bearing supporting skeletal structure for said hull construction and defining an inner area in said vessel for receiving a cargo and the like;

(b) a rigid synthetic foam core which is adhered to the outer surfaces of said inner hull structure and thereby encases said inner hull structure, the outer surfaces of said core substantially defining an outer configuration of said hull construction; and

(c) outer skin means adhered to the outer surfaces of said core, said skin means substantially covering the outer surfaces of said core to provide a protective covering therefore but not providing structural support necessary to maintain the structural rigidity of said hull construction.

4,365,581

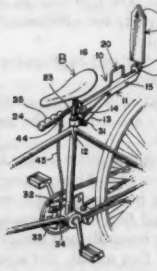
TRAFFIC SIGNALING ATTACHMENT DEVICE FOR BICYCLES

Henry Margiloff, 1817 S. Ocean Dr., West Bldg., PH 28, Hallandale, Fla. 33009

Filed Dec. 28, 1981, Ser. No. 335,106

Int. Cl.³ B60Q 1/30

U.S. Cl. 116—52 5 Claims



1. A traffic signaling attachment device for bicycles each having a conventional bicycle frame, seat, a front and a rear wheel, drive cranking mechanism and crank sprocket wheel comprising, in combination, an elongated supporting framework, means for attaching said supporting framework to a bicycle so that said means for attaching is adapted to extend rearwardly of the bicycle seat above the rear bicycle wheel, an elongated control rod journaled along the length of said supporting framework, an elongated signal arm member fixed with respect to and extending substantially perpendicularly outwardly of said control rod, means releasably constraining said control rod so that said signal arm member normally extends in a vertically-upward direction, handle means connected to one end of said control for releasing said control rod for turning about its longitudinal axis to one or the other, selectively, of opposed, sidewardly-outwardly extending positions, and means for interconnecting said control rod and the bicycle drive cranking mechanism for automatically wagging the sidewardly-outwardly extending signal arm member through an arc of movement at the selected side, said means for interconnecting said control rod and the bicycle drive cranking mechanism comprising a cam lever for being pivotally connected at one end with respect to the bicycle frame, a cam roller for being rotatably journalled with respect to the bicycle crank sprocket wheel and operative to ride along the underedge of said cam lever during a portion of each rotative cycle of said sprocket wheel for periodically lifting the other end of said cam lever between a lower-most position of rest and an elevated position, resilient means normally urging said cam lever into its position of rest, and a chain interconnecting an outer end portion of said cam lever and the outer end of a connector pin extending radially-outwardly of said control rod in the vertically-downward position when said control rod is in its normal, releaseably-constrained position.

4,365,582

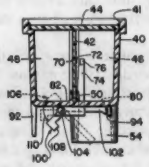
DIFFERENTIAL PRESSURE SIGNAL DEVICE

David C. Boyer, Chicago, and William E. Ruehl, Wheeling, both of Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

Filed Nov. 24, 1980, Ser. No. 209,445

Int. Cl.³ G01L 19/12; G08B 3/00

U.S. Cl. 116—70 10 Claims



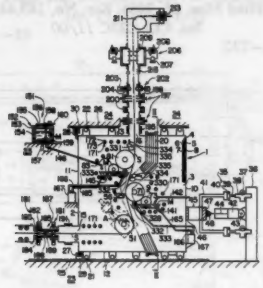
1. A differential pressure signal device including a housing, an apertured plate-like member dividing said housing into two chambers, limited aperture means in said housing for exposing one of said chambers to a first pressure source, means connecting the other of said chambers to a second pressure source which may vary between being equal to or less than said first pressure source whereby a differential in pressure between said two chambers may exist when said second pressure source is less than said first pressure source, a resilient elongated flat reed fixed at one end to said plate-like member and adapted to overlie the aperture therein, means adapted to be controlled for exposing said one of said chambers to ambient pressure when the differential in pressure between said two chambers reaches a predetermined level, said means for exposing includes a second aperture in said one of said chambers and a controlled flapper valve means normally closing said second aperture until said differential in pressure reaches said predetermined level at which time said valve means opens and exposes said one of said chambers to ambient pressure, whereby said reed is adapted to provide an audible signal in response to when said differential in pressure reaches said predetermined level.

4,365,583

APPARATUS FOR APPLYING COATING OF MOLTEN METALS

Takahashi Hisashi; Hanai Satoshi, and Yoshida Katsuyoshi, all of Toukai, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Division of Ser. No. 43,096, May 29, 1979, Pat. No. 4,250,207.
This application Aug. 25, 1980, Ser. No. 181,222
Claims priority, application Japan, May 29, 1978, 53-63317
Int. Cl.³ C23C *1/02*; B05C *1/08*
U.S. Cl. 118—65 11 Claims



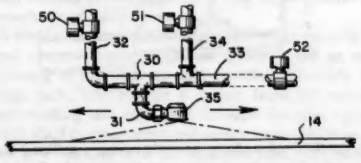
1. An apparatus for applying a coating of molten metal comprising a plating chamber cut off from the atmosphere, at least one rotatable deflector roll horizontally disposed in the plating chamber, the deflector roll being adapted to change the running direction of a strip to be coated, a pair of power-driven coating rolls disposed on both sides of the strip passing through the plating chamber, the deflector and paired coating rolls being positioned so that the strip contacts the coating rolls with a suitable arc of contact, a molten coating metal bath provided adjacent to each coating roll, and at least one pickup roll contacting the coating roll, with the lower portion thereof immersed in molten metal in the molten metal bath, the pickup roll supplying the molten metal so as to form a uniform film thereof on the coating roll, at least one of the coating rolls being shiftably supported so as to be drawn away from the strip surface.

4,365,584

APPARATUS FOR MAKING MIRRORS

Frank M. Workens, Jamestown, N.Y., assignor to Falconer Plate Glass Corporation, Falconer, N.Y.

Division of Ser. No. 853,410, Nov. 21, 1977, Pat. No. 4,135,008.
This application Sep. 13, 1978, Ser. No. 941,983
Int. Cl.³ B05D *1/02*
U.S. Cl. 118—300 7 Claims



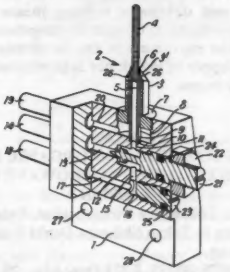
1. An airless apparatus for applying silvering solutions to glass comprising a manifold, an outlet intermediate the ends of said manifold, a reducing solution inlet on said manifold on one side of the outlet, a caustic and silver solution inlet on the manifold on the opposite side of the outlet from the reducing inlet, means for airless delivery of a reducing solution and a caustic and silver solution to said outlet, means for maintaining at least one of a sufficiently higher volume and pressure of reducing solution in the manifold and at the outlet than the volume of caustic and silver solution to prevent caustic and silver solution from entering the reducer solution inlet side of the manifold and a spray nozzle on said outlet capable of delivering all of the mixed solutions from the manifold through a single orifice in a defined spray pattern.

4,365,585

SPRAYING DEVICES

Donald B. Naylor, Southampton, and Wladyslaw H. Krywiczanin, Fairoak, both of England, assignors to British-American Tobacco Company Limited, London, England

Continuation of Ser. No. 78,579, Sep. 24, 1979, abandoned. This application Apr. 7, 1981, Ser. No. 251,786
Claims priority, application United Kingdom, Oct. 6, 1978, 39576/78
Int. Cl.³ B05B *17/00, 7/16, 15/02*
U.S. Cl. 118—302 5 Claims



1. A liquid-spraying device comprising a body, an elongate narrow unshrouded tubular spray tip carried by the body, first and second duct means in the body, via which duct means the liquid and an atomising medium respectively cab be supplied to the tip, a third duct means for supplying a cleaning medium, jet means located remotely from the discharge end of said spray tip, connected to the third duct means and arranged to direct the cleaning medium along and around the outside of the tip to the discharge end thereof, a nozzle head connected to the body, the spray tip being mounted on and extending from said head, the body having a plurality of superimposed cavities with means for communicating with, respectively from the lowest cavity upwardly, a supply of the atomising medium, a supply of the liquid to be sprayed and a supply of the cleaning medium, the intermediate cavity, which has means for controlling the supply of the liquid and communicates with the spray tip through an axial passage in the nozzle head, while the highest cavity communicates with the jet means through axially disposed passage means provided in the nozzle head around said axial passage.

4,365,586

DEVELOPING DEVICE

Nagao Hosono, Chofu; Nobuyuki Miyake, Yokohama; Junichiro Kanbe, Tokyo; Shusei Tsukada, and Kozo Arao, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

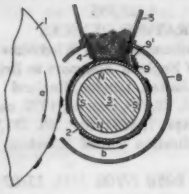
Filed Feb. 6, 1980, Ser. No. 118,926
Claims priority, application Japan, Feb. 15, 1979, 54-17738; Feb. 15, 1979, 54-17740
Int. Cl.³ G03G *15/09*
U.S. Cl. 118—652 15 Claims

1. A developing device comprising:

developer holding means disposed with a gap with respect to a latent image bearing member for holding and moving developer to a development station;

developer supply means for supplying developer to the surface of said developer holding means; and

a developer removing blade adapted to be in contact with the surface of said developer holding means to remove the developer on the surface of said developer holding means, said developer removing blade having developer passage openings adjacent to the portion thereof which is in



contact with the surface of said developer holding means thereby again imparting the removed developer to the surface of said developer holding means at a position which is downstream of said development station with respect to the movement of the developer and which is before the supply of developer is terminated at the developer supply means.

4,365,587

APPARATUS FOR FORMING ORGANIC POLYMER THIN FILMS UTILIZING MICROWAVE INDUCED PLASMAS

Masahiko Hirose, Tokyo, and Yoshimi Akai, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

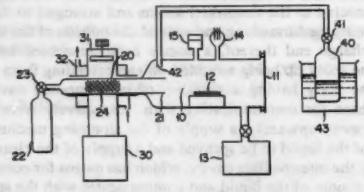
PCT No. PCT/JP79/00193, § 371 Date Mar. 24, 1980, § 102(e) Date Mar. 24, 1980, PCT Pub. No. WO80/00346, PCT Pub. Date Mar. 6, 1980

PCT Filed Jul. 25, 1979, Ser. No. 191,242

Claims priority, application Japan, Jul. 25, 1978, 53-89972

Int. Cl.³ C08F 2/52

U.S. Cl. 118—723 **6 Claims**



1. An apparatus for forming a thin organic film upon a substrate by means of a plasma comprising:

means for generating microwaves;

a resonator having a hollow interior portion and connected to said microwave generating means;

a tube for discharging said microwaves disposed across and penetrating said resonator for producing a microwave plasma in a plasma forming region of said tube;

means connected to a first end portion of said tube for introducing a plasma generating carrier gas into said tube;

a reaction chamber connected to and communicating with a second end portion of said tube and disposed apart from said plasma forming region;

means for evacuating said reaction chamber connected to said reaction chamber;

means for supplying an organic compound monomer into said reaction chamber, said supplying means having an inlet for introducing said monomer into said chamber such that said monomer is polymerized;

a substrate disposed within said chamber for supporting said polymerized monomer disposed nearer said second end portion of said tube than said inlet of said supplying means; and

wherein said substrate is disposed downstream from said inlet and downstream from said second end portion of said tube.

4,365,588

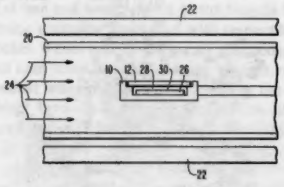
FIXTURE FOR VPE REACTOR

Stuart T. Jolly, Yardley, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 13, 1981, Ser. No. 243,442

Int. Cl.³ C23C 11/00

U.S. Cl. 118—732 **7 Claims**



1. A fixture for use within an epitaxial deposition reactor, comprising:

a box adapted to receive a semiconductor substrate, the box being movable to a position of turbulent reactant gas flow within the reactor; and

a porous cover for said box, said cover permitting reactant gas to diffuse therethrough, such that a stagnant mixture of reactant gas is maintained between the substrate and the cover while the box is within the zone of turbulent reactant gas flow.

4,365,589

METHODS OF AND/OR APPARATUS FOR MILKING ANIMALS

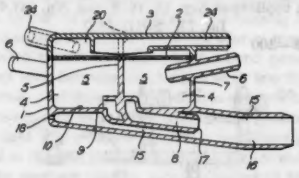
Evan M. Phillips, and Thomas D. Millar, both of Hamilton, New Zealand, assignors to AHI Operations Limited, Manukau City, New Zealand

Filed Dec. 8, 1980, Ser. No. 214,427

Claims priority, application New Zealand, Dec. 20, 1979, 192474

Int. Cl.³ A01J 5/04, 5/12

U.S. Cl. 119—14.02 **14 Claims**



1. A method of milking animals using a milking machine which method includes the steps of directing the fluid emanating from each teat cup of a cluster of teat cups through an inlet into an individual chamber for that teat cup, causing the flow of fluid in each said individual chamber to produce a swirling action such that milk already in the chamber cannot re-enter the fluid inlet from the teat cup to the chamber without a marked change in direction, and directing fluid emanating from each of said individual chambers into a conduit leading to a milk line of the milking machine in a manner such that the

interchange of milk between said teat cups is obviated or minimized.

4,365,590

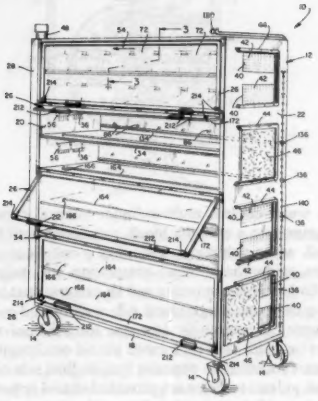
VENTILATED ANIMAL CAGE RACK

Albert P. Ruggieri, Flourtown, Pa.; Frank J. Marinaccio, Ridgewood; Neil E. Campbell, Hasbrouck Heights, both of N.J.; Wayne Allen, Hatboro, Pa.; Stanley Moum, Westfield; Paul F. Malatesta, Somerset; Joseph J. Pietrowski, Linden, and Leonard H. Schwartz, North Brunswick, all of N.J., assignors to Lab Products, Inc., Maywood, N.J.

Filed Jul. 20, 1981, Ser. No. 284,707

Int. Cl.³ A01K 1/03

U.S. Cl. 119—15 19 Claims



1. A ventilated animal cage rack comprising:

an open-front housing having spaced transverse partition walls extending the width thereof and dividing said housing into a plurality of horizontally-disposed shelf compartments, each compartment having a solid, imperforate ceiling and a solid, imperforate floor and being sized to house a plurality of animal cages having imperforate side and bottom walls and open tops,

a plurality of retractable transparent doors closing off the front open end of said housing and cooperating with said partition walls to seal off and isolate the interiors of said shelf compartments from one another,

means mounting each of said doors on said housing for individual movement between a closed position covering over at least one of said shelf compartments and an open position providing access to said shelf compartments,

a low pressure plenum extending vertically along one side of said housing in communication with an air exhaust system exteriorly of said housing.

each shelf compartment having an air outlet opening at one end communicating with said plenum, and an air inlet opening at the opposite end opening exteriorly of said cage rack, whereby air is drawn from the atmosphere surrounding said cage rack through the inlet opening of each shelf compartment and passes horizontally in a laminar low-velocity flow through said shelf compartment to said outlet opening and into said plenum,

means for removably mounting a plurality of said animal cages in a transverse row along each of said shelf compartments with the open tops of said cages spaced an appreciable distance below the ceiling of said shelf compartment,

the inlet and outlet openings of each shelf compartment being positioned to direct said air flow across the top open ends of the row of cages mounted in said shelf compartment, thereby ventilating each shelf compartment individually and isolating the shelf compartments from the exterior of said cage rack.

4,365,591

LIVESTOCK HANDLING SYSTEM AND APPARATUS THEREFOR

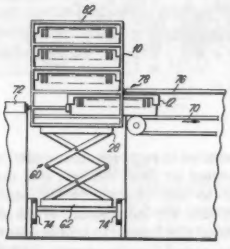
David R. Wills, Roydon, nr Diss; Ralph E. Green, Hove, and Barry W. Landymore, Brockdish, nr Diss, all of England, assignors to Anglia Autoflow Limited, England

Filed Oct. 19, 1981, Ser. No. 312,862

Claims priority, application United Kingdom, Apr. 1, 1981, 8110236

Int. Cl.³ A01K 31/07

U.S. Cl. 119—82 15 Claims



1. A system for handling livestock comprising:

(a) a housing having separate compartments in the form of slideable open topped drawers which can be slide at least from one side thereof completely from the housing, the housing and drawers forming a container,

(b) the housing includes a framework which provides guides on which the drawers can slide,

(c) the said housing having a top panel which provides a cover for the upper most drawer or drawers,

(d) each of the individual drawers below the upper most drawer or drawers being closed off (when in its pushed-in position) from the drawer above by at least the floor of the latter,

(e) a transfer conveyor for receiving drawers removed from a container,

(f) means for locating a container adjacent the transfer conveyor so that as a drawer is slid out from the container the underside registers with the transfer conveyor,

(g) a roof spaced from and above the transfer conveyor for closing off the open tops of the drawers as they are transferred therealong so as to remove the tendency for livestock to jump or fly out of the drawers, and

(h) an unloading station towards which the transfer conveyor moves the drawers beneath the said roof.

4,365,592

FAN DRIVE ACTUATOR

Warren G. Bopp, Farmington Hills, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Oct. 24, 1979, Ser. No. 88,217

Int. Cl.³ F01D 7/02

U.S. Cl. 123—41.12 8 Claims

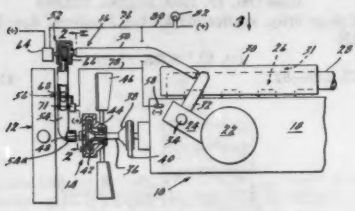
1. A fan drive actuator for use with an engine system of the type including an internal combustion engine having cooling passages containing liquid coolant, an exhaust manifold, a jacket structure surrounding at least a portion of the exhaust manifold to create a heat sink, a carburetor, an air cleaner arranged to deliver air to the carburetor, means for selectively delivering preheated air to the air cleaner from the heat sink, a radiator, a fan drive drivingly interconnecting the engine and the fan, and a sensor mechanism operative in response to a predetermined ambient air temperature to cause engagement of

the fan drive to drive the fan and cool the coolant; said actuator including

A. a thermostatic switch arranged to sense the temperature of the engine coolant;

B. conduit means arranged to extend from the heat sink to the vicinity of the sensor mechanism;

C. means operative in response to the sensing of a predetermined coolant temperature by said switch to complete an electrical circuit; and



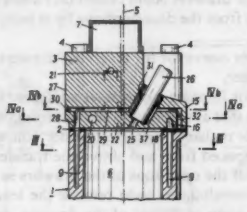
D. means operative in response to completion of said circuit to direct heated air from the heat sink through said conduit means to the vicinity of the sensor mechanism, whereby to raise the temperature of the ambient air adjacent the sensor mechanism to said predetermined ambient air temperature and thereby operate the sensor mechanism and engage the fan drive to drive the cooling fan.

4,365,593

WATER-COOLED INTERNAL COMBUSTION ENGINE

Colin T. Pomfret, Graz, Austria, assignor to Hans List, Graz, Austria

Filed Jun. 15, 1981, Ser. No. 273,642
Claims priority, application Austria, Jun. 16, 1980, 3179/80
Int. Cl.³ F01P 1/02
U.S. Cl. 123—41.32 **5 Claims**



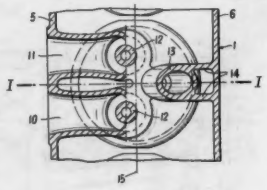
1. A water cooled multi-cylinder internal combustion engine, comprising a cylinder block and a cylinderhead which is provided with cast channels of a predominantly longitudinal direction in the area of the upper ends of the cylinders, which are open towards the cylinderhead gasket and streamed through by cooling water, and with a bore for the cooling water extending lengthwise through the cylinderhead in the vicinity of the valve guides, wherein only one of the long sides of said cylinderhead is provided with a continuous cast cooling channel which is open towards the cylinderhead gasket and is intended for cooling the upper cylinder ends, wherein said cylinderhead is provided with at least one inlet bore per cylinder on the long side opposite of said open cooling channel, which connects to the cooling water chamber in the cylinder block and ends in a crosshole extending through said cylinderhead in the area of the valve bridges and of the bore holding the spark plug or injection device, wherein all crossholes on the side opposite said inlet bores end in said open cooling channel serving as a collecting channel, and, finally, wherein an additional longitudinal bore is provided on the side of said inlet bores in said area of the upper cylinder ends, which is separately supplied with cooling water.

4,365,594

WATER-COOLED, MULTI-CYLINDER INTERNAL COMBUSTION ENGINE

Bertram Obermayer; Othmar Skatsche, and Josef Greier, all of Graz, Austria, assignors to Hans List, Graz, Austria

Filed Aug. 22, 1980, Ser. No. 180,459
Claims priority, application Austria, Aug. 28, 1979, 5758/79
Int. Cl.³ F02F 1/36
U.S. Cl. 123—41.82 R **3 Claims**



1. A water-cooled, multi-cylinder internal combustion engine comprising, a cylinder block, a cylinder head having a top end wall, and a cooling jacket, all of a one-piece casting construction, said cylinder head comprising, for each cylinder of said cylinder block, an intake and an exhaust duct both extending from only one longitudinal side wall of said cylinder head and opening substantially into one longitudinal side of said head, valve guide sockets located at said one longitudinal side, an injector socket at an opposite longitudinal side of said cylinder head, at least two fins are provided at said opposite longitudinal side, said ducts, said valve guide sockets, said injector socket and said fins solely interconnecting the end wall of said cylinder and said cooling jacket, whereby an at least approximately equal section modulus for said one longitudinal side wall and for an opposite longitudinal side wall of said cylinder head is assured to thereby promote an even distribution of combustion forces from said end wall of said cylinder to said cooling jacket and to said longitudinal walls of said cylinder head, and to thereby also effect a reduced noise emission from said longitudinal walls, and wherein said fins are spaced from one another extending parallel from said injector socket to said cooling jacket and are provided symmetrically to a plane comprising the cylinder axis and lying at right angles to said longitudinal side walls.

4,365,595

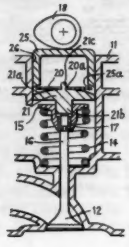
ACTUATION OF VALVES OF INTERNAL COMBUSTION ENGINES

Sanzio P. V. Piatti, 14 Corso Porta Nuova, Milano, Italy

Filed Dec. 19, 1979, Ser. No. 105,230
Claims priority, application Italy, Dec. 27, 1978, 31314 A/78
Int. Cl.³ F01L 1/22
U.S. Cl. 123—90.53 **10 Claims**

1. An internal combustion engine having cam-operated poppet valves which are urged to close on their valve seats by valve springs and having spring means located in the clearance gap in each chain of valve-actuating mechanism between a cam surface and the end of a valve stem, said spring means being constituted by a disc spring comprising at least one thin metal disc located between two relatively movable members in said chain of mechanism, the first of said movable members having a convex surface engaging one face of said disc spring approximately centrally and the second of said movable members having an annular surface engaging the other face of the disc spring around its periphery so that when said members are moved towards one another said convex surface engages progressively increasing areas of the adjacent face of the disc

spring from its centre as the disc spring is progressively deformed about said convex surface, the convex surface and the disc spring cooperating to produce a spring force, as the disc spring is progressively deflected and deformed about said convex surface, which increases at an increasing variable rate from zero when relaxed to a permitted maximum value which corresponds with the maximum relative movement between said two movable members and which has a force-deflection ratio which is low during a portion of its deflection from a relaxed state and which increases very rapidly as said maximum value is approached, and wherein the inner perimeter of said annular surface lies within the outer perimeter of said



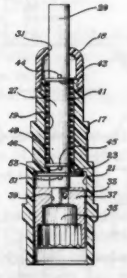
convex surface, the disc spring is free of perforations in its working surface and is unrestricted to cooperate with said convex surface such that said spring force of the disc reaches a value in excess of the static force exerted by the valve spring, and begins to open the valve during relative movement between said two movable members less than that required to deflect the periphery of the disc spring to its permitted maximum, the disc spring being partially deflected at an initial adjustment of the valve-actuating mechanism to a position in which the force-deflection ratio is low, whereby variations in the clearance gap during engine operation are automatically compensated for.

4,365,596

ENGINE STARTING DEVICE

M. C. Bennett, Sr., Rte. 1, Box 587-A, Fort Worth, Tex. 76135

Filed Sep. 18, 1980, Ser. No. 188,316
Int. Cl.³ F02N *11/12*
U.S. Cl. 123—179 SE **3 Claims**



1. A quick release starting device for an internal combustion engine having a rotary crankshaft, comprising:

a portable case having interior sidewalls, said interior sidewalls having a shoulder formed therein;

a sliding shaft vertically disposed within said case, said shaft having an upper exposed end adapted to be chucked in a power drill and a lower end;

coupling means mounted on the lower end of said shaft for engaging said rotary crankshaft;

a compression spring mounted about said sliding shaft in said case;

a fixed spring retainer affixed to the upper end of said sliding shaft above said compression spring located within said case;

a sliding spring retainer fitted on the lower end of said shaft below said compression spring and above said coupling means, said sliding spring retainer having an opening therein selected to allow said sliding shaft to pass within said opening but to retain said compression spring; and

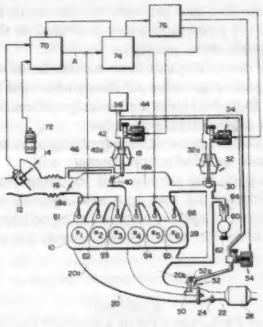
said sliding spring retainer being engagable with said shoulder formed in the interior sidewalls of said case and said case being engagable with said engine so that said spring is compressed between said fixed and sliding spring retainers when downward pressure is applied on the upper exposed end of said shaft to engage said coupling means and cause said shaft to slide through said sliding spring retainer opening and said spring being relaxed when said pressure is removed to disengage said coupling means.

4,365,597

SPLIT TYPE INTERNAL COMBUSTION ENGINE

Haruhiko Iizuka, Yokosuka, and Fukashi Sugasawa, Yokohama, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Nov. 12, 1980, Ser. No. 206,141
Claims priority, application Japan, Nov. 15, 1979, 54-148213
Int. Cl.³ F02D *17/00*
U.S. Cl. 123—198 F **7 Claims**



1. An internal combustion engine including first and second cylinder units each including at least one cylinder, an intake manifold divided into first and second intake passages leading to said first and second cylinder units, respectively, an exhaust manifold divided into first and second exhaust passages leading from said first and second cylinder units, respectively, said exhaust manifold connected at its downstream end to an exhaust duct, and control means for providing a control signal to disable said second cylinder unit when the engine load is below a predetermined value, which comprises:

(a) first normally open valve means located in said second intake passage;

(b) second normally open valve means locaated at the outlet of said second exhaust passage;

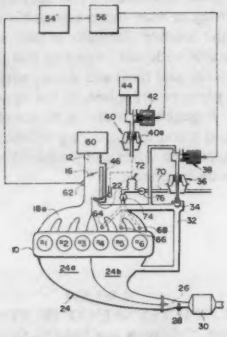
(c) means responsive to the control signal from said control means for closing said first and second valve means; and

(d) pressure control means responsive to the control signal from said control means for supplying a predetermined pressure not less than atmospheric pressure to said second intake passage, thereby maintaining said second intake passage at the predetermined pressure.

4,365,598
INTERNAL COMBUSTION ENGINE

Fukashi Sugasawa, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Feb. 17, 1981, Ser. No. 234,901
Claims priority, application Japan, Feb. 20, 1980, 55-20019
Int. Cl.³ F02D 17/02
U.S. Cl. 123—198 F 6 Claims



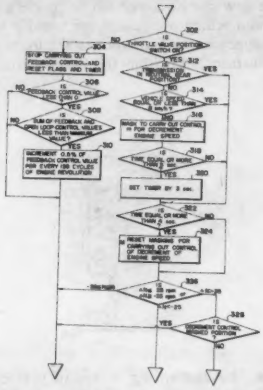
1. An internal combustion engine comprising:
(a) first and second cylinder units each including at least one cylinder;
(b) an induction passage having therein a throttle valve, said induction passage being divided, downstream of said throttle valve, into first and second intake passages leading to said first and second cylinder units, respectively;
(c) a normally open stop valve provided at the entrance of said second intake passage;
(d) control means responsive to conditions of engine load for closing said stop valve to disconnect said second intake passage from said induction passage when the engine load is below a predetermined value;
(e) a main fuel supply unit for supplying a controlled amount of fuel into said induction passage; and
(f) an auxiliary fuel supply unit for supplying a predetermined amount of fuel into said second intake passage downstream of said stop valve for a predetermined period of time after the engine load exceeds the predetermined value.

4,365,599
OPEN AND CLOSED LOOP ENGINE IDLING SPEED CONTROL METHOD AND SYSTEM FOR AN AUTOMOTIVE INTERNAL COMBUSTION ENGINE

Kenji Ikeura, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Kanagawa, Japan

Filed May 5, 1980, Ser. No. 146,427
Claims priority, application Japan, May 9, 1979, 54-55670; May 21, 1979, 54-61510
Int. Cl.³ F02B 3/08; F02M 7/12; F02B 75/10; F02D 1/04
U.S. Cl. 123—339 12 Claims

1. In an automotive vehicle having an internal combustion engine and a transmission, said engine having an air intake passage with a throttle valve therein, an engine idling speed control system, comprising:
a bypass passage which bypasses said throttle valve;
means for controlling flow rate of intake air flowing through said bypass passage;
first sensor means for detecting engine speed;
second sensor means for detecting a first parameter indicative of a fully closed position of said throttle valve;
a microcomputer including third sensor means for detecting predetermined engine driving conditions indicative of a stable driving condition of said internal combustion engine, whereat parameters of controlling engine idling speed are generally at a steady state condition, said predetermined engine conditions including at least one of second, third and fourth parameters, said second parameter being a neutral gear position of said transmission, said third parameter being a vehicle speed less than a given speed, and the fourth parameter being fuel supply in other than a fuel shut off condition; and

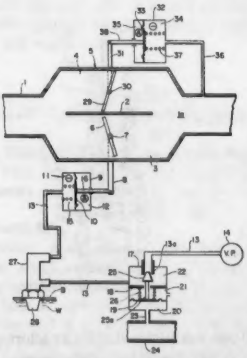


said microcomputer closed loop controlling said controlling means based on said engine speed detected by said first sensor means when said second and third sensor means detect said first parameter and said stable driving condition, respectively, and for otherwise open loop controlling said controlling means.

4,365,600
DIESEL THROTTLE VALVE CONTROL SYSTEM

Teruo Nakada, Yokohama, and Mitsuo Iwahara, Ebina, both of Japan, assignors to Isuzu Motors, Limited, Kanagawa, Japan

Filed Aug. 1, 1980, Ser. No. 174,424
Int. Cl.³ F02D 1/04, 1/06
U.S. Cl. 123—339 7 Claims



1. An intake air throttle valve control system for a diesel engine having an intake manifold and an exhaust manifold comprising:
intake passage means connected to said intake manifold, said intake passage means being partitioned into a first intake passage and a second intake passage connected in parallel;

a throttle valve disposed in said first intake passage for providing a throttling effect therein;

a negative pressure control valve disposed in said second passage; and

means connected to said negative pressure control valve and responsive to a negative pressure downstream of said first and second passages for maintaining a negative pressure downstream of said first and second passage at a predetermined substantially constant value when said engine is operating at idle speed.

4,365,601

METHOD AND APPARATUS FOR CONTROLLING ROTATION SPEED OF ENGINE

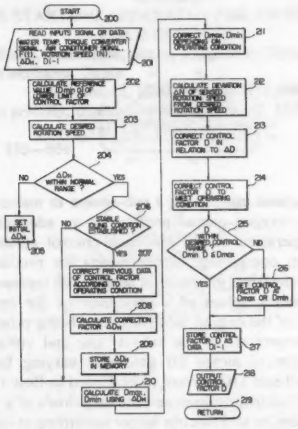
Hisamitsu Yamazoe; Masumi Kinugawa, both of Kariya, and Masaaki Kurii, Kasugai, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Oct. 15, 1980, Ser. No. 197,275

Claims priority, application Japan, Oct. 17, 1979, 54-134411

Int. Cl.³ F02D *11/10*

U.S. Cl. 123—339 **9 Claims**



1. A method of controlling the rotation speed of an engine of a vehicle having an automatic transmission and an air conditioner comprising the steps of:

calculating a desired value of the idling rotation speed of the engine;

sensing the actual idling rotational speed of the engine;

calculating the deviation of the sensed actual idling rotation speed from the desired value;

calculating and storing a data of an idling rotation speed control factor on the basis of said deviation;

calculating and storing a reference correction factor in dependence upon the stored data of said control factor and a preset standard idling condition data of the engine;

calculating and storing an upper limit and a lower limit of said control factor using the stored value of said reference correction factor;

controlling to limit said control factor so that its value lies within the control range between said upper limit and said lower limit, and storing the limited value of said rotation speed control factor in place of said stored data; and

controlling the amount of intake air or the amount of the air-fuel mixture supplied to the engine on the basis of the newly stored data of said control factor.

4,365,602

TIMING SIGNAL GENERATOR FOR IGNITION AND FUEL INJECTION SYSTEMS IN A 4-STROKE INTERNAL COMBUSTION ENGINE

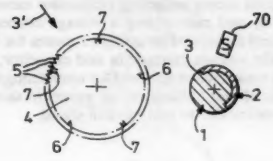
Armin Stiller, Brunswick, and Manfred Knoke, Wolfsburg, both of Fed. Rep. of Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

Filed Nov. 3, 1980, Ser. No. 203,112

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1979, 2951622

Int. Cl.³ F02P *9/00*; F02D *5/02*

U.S. Cl. 123—414 **3 Claims**



1. Apparatus for generating control signals for controlling the timing of at least one of the events contained in the group comprising spark ignition and fuel injection in an internal combustion engine, having a plurality of cylinders, a crankshaft, and a camshaft that rotates at one-half of the rotational speed of the crankshaft, comprising:

an integral circular member on said crankshaft having a plurality of teeth distributed about the circumference of said member and a plurality of timing position markings, each of said markings being associated with one of said cylinders, said timing position markings being divided into two groups, each of said two groups being associated with cylinders to be furnished with said control signals during one revolution of said crankshaft;

a single mark on said camshaft extending over one-half the circumference of said camshaft, beginning at a shaft angle corresponding to a crankshaft position between two of said position markings from the same one of said two groups;

sensing means including a first sensor for scanning said single mark, a second sensor for scanning said teeth, and a third sensor for scanning said position markings, where each of said sensors has an output; and

an evaluating circuit responsive to said output of said first sensor and having an output for said control signals, said circuit connected to said outputs of said second and third sensors and including gating means for gating said output of said third sensor in response to the output of said first sensor and deriving said control signals therefrom in response to said position markings for one of said two groups during alternate revolutions of said crankshaft.

4,365,603

SYSTEM FOR CONTROLLING AIR-FUEL RATIO

Makoto Shikata, Musashimurayama; Hisashi Osano, Koganei, and Takuro Morozumi, Fuchu, all of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo and Nissan Motor Co., Ltd., Yokohama, both of, Japan

Filed Aug. 1, 1980, Ser. No. 174,381

Claims priority, application Japan, Aug. 2, 1979, 54-98922

Int. Cl.³ F02M *7/00*

U.S. Cl. 123—440 **13 Claims**

1. In a system for controlling the air-fuel ratio for a carburetor of an internal combustion engine having an intake passage, an exhaust passage, a throttle valve in the intake passage, detecting means for detecting the concentration of a constituent of the exhaust gases passing through said exhaust passage, air-fuel mixture supply means for supplying an air-fuel mixture to the intake passage, and an electromagnetic valve means for correcting the air-fuel ratio of the air-fuel mixture supplied by

said air-fuel mixture supply means, the improvement comprising:

electronic control means comprising,

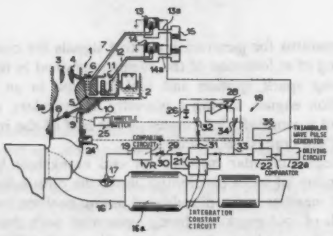
a comparing circuit means for comparing an output signal of said detecting means with a reference value corresponding to stoichiometric air-fuel ratio,

a proportional and integration circuit connected to said comparing circuit means for producing a control signal, and

driving circuit means for driving said electromagnetic valve means via said control signal for controlling the air-fuel ratio to a value approximately equal to the stoichiometric air-fuel ratio,

holding circuit means including a capacitor means for being charged by and memorizing a voltage corresponding to said control signal and an amplifier means for being operated by the voltage charged in said capacitor,

first switch means when actuated for connecting said capacitor means of said holding circuit means to said electronic control means and to said control signal,



second switch means when actuated for disconnecting said detecting means operatively from said electronic control means,

third switch means when actuated for operatively connecting an output of said amplifier means of said holding circuit means to said driving circuit means of said electronic control means,

means for sensing the idling condition and thereupon for actuating said first switch means, whereby said voltage corresponding to said control signal is charged in said capacitor means during the idling condition, and

vacuum switch means for detecting a high vacuum in said intake passage which occurs in such a rapid deceleration that could cause misfiring to occur and for thereupon actuating said second switch means and said third switch means, so that during said rapid deceleration said driving circuit means is operated by the output of said amplifier means for operatively driving said electromagnetic valve means with a control signal substantially equal to said control signal in the preceding idling condition.

4,365,604

SYSTEM FOR FEEDBACK CONTROL OF AIR/FUEL RATIO IN IC ENGINE WITH MEANS TO CONTROL CURRENT SUPPLY TO OXYGEN SENSOR

Kohki Sone, Tokyo, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

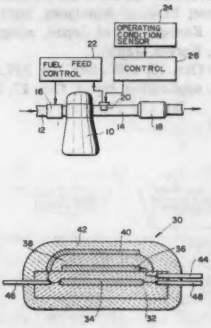
Filed Feb. 4, 1981, Ser. No. 231,234

Claims priority, application Japan, Sep. 8, 1980, 55-124378

Int. Cl.³ G01N *27/04;* **F02B** *3/00, 3/08;* **G01N** *27/58*

U.S. Cl. 123—440 **10 Claims**

1. In a system for feedback control of the air/fuel ratio of an air-fuel mixture supplied to an internal combustion engine, the control system having: an electrically controllable fuel supplying means provided in the intake system of the engine; an air/fuel ratio detecting probe which is installed in an exhaust passage for the engine and has an oxygen-sensitive element of a concentration cell type having a substrate, a reference electrode layer laid on the substrate, a microscopically porous layer of an oxygen ion conductive solid electrolyte formed on the substrate so as to cover the reference electrode layer substantially entirely and a microscopically porous measurement electrode layer formed on the solid electrolyte layer and an electric heater; fuel feed control means for providing a control signal to the fuel supplying means to control the rate of fuel feed to the engine so as to maintain a desired air/fuel ratio by utilizing the output of the air/fuel ratio detecting probe as a feedback signal; and power supply means for energizing the electric heater and forcing a DC current to flow through the solid electrolyte layer of the oxygen-sensitive element to cause migration of oxygen ions through the solid electrolyte layer from one of the reference and measurement electrode layers towards the other to thereby establish a reference oxygen partial pressure at the interface between the reference electrode layer and the solid electrolyte layer;



the improvement comprising a sub-system to maintain said reference oxygen partial pressure at an adequate level during operation of the feedback control system, said sub-system comprising: sensor means for producing at least one electrical information signal each representative of momentary values of a parameter of the operating condition of the engine, said parameter being related also to the temperature of the exhaust gas; and voltage and current control means for gradually varying both the intensity of said DC current to be forced to flow through said solid electrolyte layer and the magnitude of a voltage to be applied to said electric heater according as the operating condition of the engine indicated by said at least one information signal varies to thereby prevent significant changes in the magnitude of said reference oxygen partial pressure by the influence of the exhaust gas temperature.

4,365,605

APPARATUS FOR IMPROVING THE ACCELERATION OF AN INTERNAL COMBUSTION ENGINE DRIVEN WITH AN EXHAUST TURBOCHARGER

Wolf Wessel, Oberriexingen; Wilfried Sautter, Ditzingen, and Johannes Brettschneider, Ludwigsburg, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 27, 1980, Ser. No. 200,654

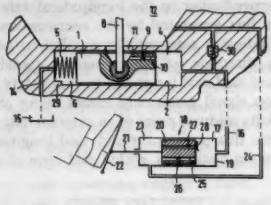
Claims priority, application Fed. Rep. of Germany, Oct. 31, 1979, 2943950

Int. Cl.³ F22B *37/10*

U.S. Cl. 123—502 **20 Claims**

1. Apparatus for improving the acceleration behavior of a self-igniting internal combustion engine driven with an exhaust turbocharger supplied with fuel by an injection pump, comprising means for testing during the operational mode of the

engine as to whether a status of acceleration of a predetermined order of magnitude is present or should be established



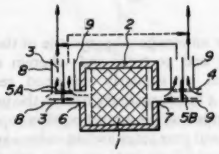
and that for this operational case, means for generating an acceleration signal in accordance with which the onset of injection is adjusted toward "early".

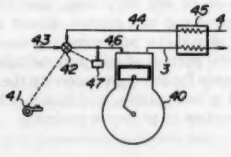
4,365,606

ENGINE STARTING APPARATUS FOR AN EXTREMELY COLD CLIMATE

Takuya Endo, Yokohama, Japan, assignor to Nissan Motor Co, Ltd., Yokohama, Japan

Filed Jan. 17, 1980, Ser. No. 113,066
Claims priority, application Japan, Jan. 17, 1979, 54-4317
Int. Cl.³ F02M *31/00*
U.S. Cl. 123—556 **8 Claims**





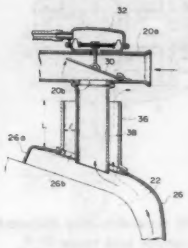
1. An engine starting apparatus for an extremely cold climate, comprising a suction conduit passing ambient air to be supplied to the engine, an exhaust conduit passing exhaust gas from the engine, a regenerator having a regenerator body accommodated therein, means to connect the regenerator with the exhaust conduit at least when the engine is in operation to thereby store heat of the exhaust gas in the regenerator body, means to connect the regenerator with the suction conduit at least when starting the engine to thereby heat the suction air, and means to control the temperature of the suction air to be within the range suitable for starting the engine, said regenerator having sufficient heat retention capability to heat the suction air from −30° C. to about 10° to 20° C. ten hours after engine stop.

4,365,607

HOT-AIR INTAKE SYSTEM OF AN INTERNAL COMBUSTION ENGINE

Yoshikazu Ishikawa, Chofu, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Mar. 11, 1981, Ser. No. 242,422
Claims priority, application Japan, Mar. 12, 1980, 55-32332[U]
Int. Cl.³ F02M *31/00*
U.S. Cl. 123—556 **5 Claims**



1. A hot-air intake system of an internal combustion engine having an air inlet tube through which air to be fed to the engine proper passes and an exhaust manifold through which the combusted gas from the engine proper passes before discharging to the open air, said hot-air intake system comprising:

first means defining in said air inlet tube a first opening for ambient air and a second opening for hot air;

second means for changing the ratio of the opening degree of the first opening and that of the second opening in accordance with the temperature of ambient air;

an exhaust manifold cover covering said exhaust manifold with a clearance therebetween, said cover being formed with an opening;

a first straight through tube connected at its one end to the opening of said cover and extending toward the second opening of said air inlet tube with its other end separated from the air inlet tube; and

a second straight through tube disposed in said first straight through tube with a clearance therebetween, said second straight through tube having one end connected to the second opening of said air inlet tube and the other end exposed to the interior of said cover, so that the interior of said cover is in free communication with the open air through said clearance.

4,365,608

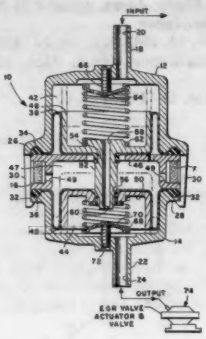
CONTROLLING ENGINE EXHAUST GAS RECIRCULATION AND VACUUM INVERTER

Cyril E. Bradshaw, Kalamazoo, and Martin W. Ultvlugt, Battle Creek, both of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Sep. 9, 1980, Ser. No. 185,467
Int. Cl.³ F02M *25/06*
U.S. Cl. 123—568 **17 Claims**

16. In combination with an internal combustion engine having a combustion chamber inlet induction passage and a combustion chamber exhaust discharge passage, movable valve means for providing exhaust gas recirculation (EGR) from said discharge passage to said induction passage, means for sensing fluid pressure changes in said induction passage operative for inverting said changes to provide a source of fluid pressure which changes inversely with changes in induction passage pressure, fluid pressure responsive actuator means receiving said source of fluid pressure and operative for moving said valve means in response to changes in said fluid pressure source, said movement being controlled such that EGR flow is

provided as a substantially constant percentage of engine air mass flow over a predetermined range of inlet induction pressures and EGR flow is substantially defeated at inlet induction passage pressures outside said range.



4,365,609

DISTRIBUTOR ASSEMBLY HAVING AN IGNITION COIL THEREIN

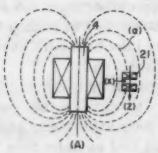
Kouichi Toyama, Kariya; Yasushi Sugiura, Chiryu, and Michio Adachi, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jan. 16, 1981, Ser. No. 225,530

Claims priority, application Japan, Jan. 23, 1980, 55-7255; Jan. 23, 1980, 55-7256

Int. Cl.³ F02P *1/00*

U.S. Cl. 123—635 **12 Claims**



1. A distributor assembly having an ignition coil, therein for an ignition system of an engine comprising:

(a) a distributor body having a distributor housing and a cap attached to said distributor housing;

(b) a rotary shaft disposed in said distributor body adapted to be rotated in synchronism with the rotation of a crankshaft of said engine;

(c) a signal rotor, attached to said rotary shaft, having gear teeth-like projections about its circumference;

(d) rotation signal generating means disposed inside said distributor body, facing said projections of said signal rotor, for providing an output signal by detecting the variation in magnetic flux caused by the rotation of said signal rotor, and having its magnetic sensitive direction aligned in the radial direction of said signal rotor when said signal rotor rotates;

(e) an ignition coil having primary and secondary windings wound around a core, energization of said primary winding being controlled in accordance with said output signal of said rotation signal generating means, said ignition coil being disposed in said distributor body; and

(f) a distributing mechanism for distributing a high voltage induced in said secondary winding to a plurality of terminals, the number of which equals the number of the cylinders of said engine, a portion of said distributor mechanism being attached to said rotary shaft;

said ignition coil being arranged in such a manner than a plane perpendicular to the longitudinal axis of the main magnetic flux generated by the energization of said primary winding is substantially parallel to said magnetic sensitive direction of said rotation signal generating means, and said axis is parallel to said rotary shaft; and

said rotation signal generating means being arranged at a substantially midway point of an external magnetic path of a magnetic flux passing through said longitudinal axis of said main magnetic flux within said core of said ignition coil.

4,365,610

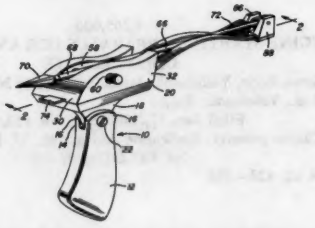
ARROW LAUNCHER

Richard W. Cooper, deceased, late of Hutchison, Kans., and by Ruth E. Cooper, Executrix, 29 Tomahawk Rd., Hutchinson, Kans. 67501

Filed Jun. 29, 1981, Ser. No. 278,621

Int. Cl.³ F41B *3/00*

U.S. Cl. 124—5 **9 Claims**



1. A launcher for an elongated projectile of the type including front and rear end portions and wherein the projectile includes a fletched or similarly equipped rear end, said launcher including a handgrip body held in the users throwing hand, said handgrip including a head portion supported therefrom having front and rear sides and an outer exposed surface extending between said front and rear sides, said head defining a groove therein between said front and rear sides, opening laterally outwardly of said exposed surface and adapted to lengthwise cradle a projectile therein, an elongated flexible and resilient arm having opposite end portions, said arm having sufficient rigidity to be self supporting said head including means for supporting one end portion of said arm with the other end portion of said arm projecting rearwardly from said head, said other end portion of said arm including forwardly opening socket means for seatingly receiving the rear end of a projectile cradled in said groove, said launcher being given a forward arcuate motion to project a projectile.

4,365,611

COMPOUND BOW WITH UNEQUALLY FLEXING ARMS

Jim Z. Nishioka, 1268 Hemlock NW., Salem, Oreg. 97304

Continuation of Ser. No. 22,054, Mar. 19, 1979, abandoned. This application Nov. 7, 1980, Ser. No. 205,008

Int. Cl.³ F41B *5/00*

U.S. Cl. 124—24 R **7 Claims**

1. An archery bow comprising

(a) a body portion,

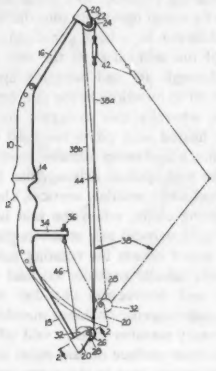
(b) a bowstring on said bow movable rearwardly in drawing movements of the bow,

(c) said bowstring including a main span and an end span,

(d) a nocking point on said main span of said bowstring,

(e) projectile guide means on said body portion providing a projectile guiding path which extends rearwardly at substantially a right angle to said body portion,

(f) first and second oppositely extending bow arms on said body portion having tip ends,
(g) said first arm flexing substantially more than said second arm during drawing movements of the bowstring main span,
(h) bowstring guide means comprising a first rotatable guide member on said first arm tip end and a second rotatable guide member on said second arm tip end,
(i) said second guide member comprising a rotatable pulley supported on said second arm tip end by a centrally located axis for non-eccentric rotation,
(j) said first rotatable guide member and said rotatable pulley having opposite bowstring engaging sides,
(k) said projectile guiding path being substantially in rearward alignment with said nocking point in a rest position of the bow,
(l) said main span of said bowstring extending between said bow arm tip ends and engaging said first rotatable guide member on the first arm tip end and said rotatable pulley on the second arm tip end,



(m) said main span of said bowstring wrapping over said rotatable pulley on the second arm tip end,
(n) said end span of said bowstring extending from said rotatable pulley on the second arm tip end to said first rotatable guide member on the first arm tip end,
(o) both said main and end spans wrapping around said first rotatable guide member in a common direction so that during operation of the bow a rearward drawing movement of said main span will cause said main span and said end span to urge rotation of said rotatable first guide member and also will cause more of said bowstring main span to reel over said rotatable pulley on the second arm tip end than over said first rotatable guide member on the first arm tip end to compensate for the difference in flexing of the arms and to provide a rearward draw of said bowstring which maintains the nocking point in all of such draw movement substantially in rearward alignment with the projectile guiding path provided by said projectile guide means.

4,365,612

DEVICE FOR PROPELLING AN INFLATED BALL BY MEANS OF AN ELASTIC IMPACT

Georges Defosse, Rue de Heuseux, 46, B 4511 Barchon, Belgium

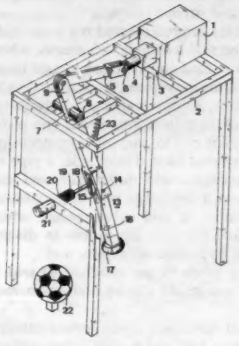
Filed May 7, 1980, Ser. No. 147,598

Claims priority, application European Pat. Off., May 7, 1979, 79200222

Int. Cl.³ F41B *15/00*

U.S. Cl. 124—54 **13 Claims**

1. A device for the propulsion of balls by elastic impact, comprising:
a frame;
a ball support mounted to said frame;
an oscillating lever pivotally mounted to said frame for movement through a first arc directed toward said ball support;
a ball strike lever pivotally mounted directly to said oscillating lever for movement therewith through a second arc substantially coplanar with said first arc;



a strike mass mounted on said strike lever for striking the ball positioned on said ball mount; and
a means connected to said frame for causing said strike lever to move about said strike lever pivot mount after said oscillating lever has moved a limited distance through said first arc thereby giving a higher speed to said strike mass.

4,365,613

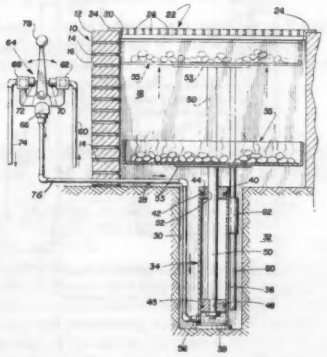
HYDRAULIC-LIFT-BARBECUE COOKING APPARATUS

James Seki, 15328 Kenoak Dr., Baldwin Park, Calif. 91706, and Damon J. Chung, 501 Marek Dr., Montebello, Calif. 90640

Filed Apr. 10, 1978, Ser. No. 894,523

Int. Cl.³ A47J *37/00*

U.S. Cl. 126—25 A **1 Claim**



1. A hydraulic-lift barbecue cooking apparatus supported on a ground surface and operated by a conventional water-pressure system comprising:
a superstructure defining a housing;
a fire well disposed in said superstructure housing having an upper, open end and a closed bottom, said bottom being closed by said ground surface;
a firebox arranged to be movably received in said fire well;
a cavity formed in said ground surface directly under said fire well;
a hydraulic-lift means located in said cavity to movably

support said firebox within said fire well, whereby said firebox can be moved the full length of said fire well, wherein said lift means comprises:

a cylindrical housing having a sealed, closed end cap and a piston-cap member;

a piston head slidable within said housing;

a piston rod attached to said piston head and having a free end extending outwardly from said piston-cap member;

a support plate secured to said free end of said piston rod to support said firebox thereon;

a valve means interconnected between said water-pressure system and said hydraulic-lift means, whereby water pressure is regulated and supplied to said hydraulic-lift means to control the movement thereof, said valve means having an inlet side, an outlet side and a discharge side;

a plurality of pipes interconnecting said water system to said hydraulic-lift means, said pipes comprising a water-supply pipe connected to said inlet side, a pipe section interconnected between said outlet side and said hydraulic-lift means, and a discharge-pipe line connected to said discharge outlet of said valve means, whereby said water from said hydraulic-lift means is discharged remotely from said hydraulic-lift means; and

a stabilizing guide means attached to said hydraulic lift to stabilize and guide the up-and-down movement of said firebox,

wherein said stabilizing guide means comprises:

a stabilizing rod affixed to said support plate; and

a tube member mounted to the side of said cylindrical housing and adapted to receive said stabilizing rod, whereby said rod moves with said support plate and said piston rod.

4,365,614

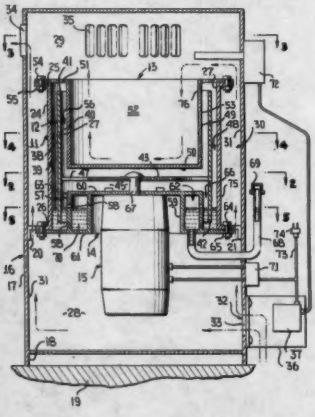
FRICTION SPACE HEATER

Robert R. Grover, R.F.D. #1, Winchester, N.H. 03470

Filed Mar. 31, 1980, Ser. No. 135,276

Int. Cl.³ F24C *09/00*

U.S. Cl. 126—247 6 Claims



1. An odorless, combustion-less quiet heater comprising;

an elongated tubular cylinder with a spoked driving disc attached an intermediate distance within to divide the tubular cylinder into a top recessed portion and a bottom recessed portion;

said tubular cylinder to rotate in a horizontal plane on a vertical axis outwardly of an inner extending convection chamber member having a convection chamber to occupy the said top recessed portion, and outwardly of an inner extending metering chamber member having an annular metering chamber with metering apertures to occupy the said bottom recessed portion, and within an elongated, cylindrical, outer stationary member with a top rim portion and a bottom rim portion, with the said top rim portion joined to the said convection chamber member, and the said bottom rim portion joined to the said metering chamber member to form outer and inner annular vertical chambers therebetween, having a clearance of about five-sixteenth of an inch, and forming an upper horizontal chamber and a lowr horizontal chamber about the said spoked driving disc with a clearance of about three-eighth of an inch in the said upper horizontal chamber and a clearance of about one-half of an inch in the said lower horizontal chamber;

said driving disc on its horizontal axis divides the said heater into an upper portion consisting of said outer and inner annular, vertical, chambers and said convection chamber and a lower portion consisting of said outer and inner annular, vertical chambers and said annular metering chamber;

a supply of oil normally occupying only said lower portions said outer and inner annular, vertical chambers and said annular metering chamber to a predetermined height but adapted to be raised upwardly into the said outer annular, vertical, chamber in a heat generating cycle, and with metering of the said oil from the said annular metering chamber through the said metering apertures cause the heated said oil to overflow in the said upper portion of the said heater, whereby; due to vertex flow and gravitional forces the heated said oil is returned through the said upper portion's said inner annular, vertical, chamber and through the said spoked driving disc to the said lower portion's said inner annular, vertical, chamber in a regenerative cooling cycle, when the said tubular cylinder is rotated on said vertical axis at substantial speed;

and electric motor means for rotating said spoked driving disc and said tubular cylinder on said vertical axis outwardly of said convection chamber mamber and outwardly of said metering chamber member and within said outer stationary member to heat said oil and transfer said heat to the outer surface of said outer stationary member and supplementary heat to the outer surface of said convection chamber member.

4,365,615

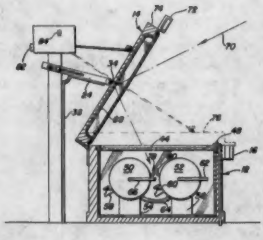
SOLAR HOT WATER HEATER

Hubert A. Melvin, Rte. 1, Box 167-A, Tar Heel, N.C. 28392

Filed Feb. 26, 1981, Ser. No. 238,435

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—419 10 Claims



1. A solar hot water heater comprising:

water storage means including at least one hot water storage tank in fluid communication with inlet and outlet water supply lines;

container means having said water storage means contained therein;

lid means supported by said container means and being operable to expose said water storage means to solar

radiation when open and to limit heat loss from said water storage means when closed;

control means including motor means and responsive to environmental temperature changes and operable for the motor means to open and close said lid means; and

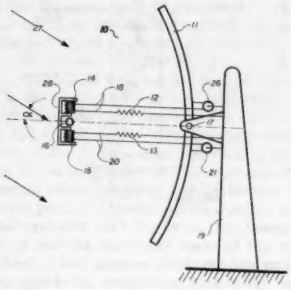
reflection means provided on said lid means to facilitate a reflection of said solar radiation against said water storage means; said control means further including a thermostat means disposed within a space adjacent said container means and coverable by said lid means and for sensing said environmental temperature changes; said thermostat means being operable to effect selectively a forward and reverse operation of said motor means so as to respectively open and close said lid means.

4,365,616

SELF-ALIGNING SOLAR COLLECTOR

Leonard B. Vandenberg, 710 Sanders Ave., Scotia, N.Y. 12302

Filed Sep. 15, 1980, Ser. No. 187,555
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—424 **9 Claims**



1. A self-aligning solar energy collection system, including:

a solar reflector supported on a frame and disposed to pivot about horizontal pivot axis, said reflector defining an extended focal line for radiation incident normally to said reflector,

a first tension cable connected at one of its ends to said frame and connected at its other end to said reflector above said pivot axis and extending parallel to and above said focal line, and

a second tension cable connected at one of its ends to said frame and connected at its other end to said reflector below said pivot axis and extending parallel to and below said focal line,

whereby said tension cables are in thermal equilibrium when said reflector is aligned with the sun, and in thermal disequilibrium when said reflector is out of alignment with the sun so that the consequent force imbalance in said cables effects a corrective rotation of said reflector about said pivot axis.

4,365,617

SOLAR ENERGY HEATING SYSTEM

Eckhard Bugash, 2493 Montclair Ave., and George Kubina, 3262 Armstrong Rd., R.D. No. 2, both of Wooster, Ohio 44691

Filed Oct. 2, 1980, Ser. No. 193,135
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—425 **9 Claims**

1. A solar energy heating system for supplying heat to a building structure comprising

a plurality of parabolic mirror reflectors mounted on a movable base;

first means mounted on said base in a position so as to intercept and absorb the reflected solar energy from said mirror reflectors;

enclosure means for containing particulate heat absorbing material;

means for circulating gas in a closed system through said first means so as to be heated thereby;

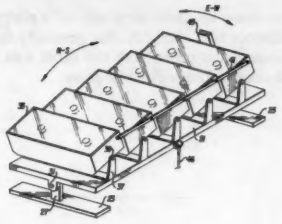
means for passing said heated gas downwardly through said particulate material so as to transfer heat to said material;

means for returning said gas to said first named means after it has passed downwardly through said material;

means mounted on said base for detecting the position of the sun;

means responsive to the output of said detector means for moving said base in a north-south and east-west direction so as to direct said reflectors towards the sun;

said means for moving said base in an east-west direction being a gravity system comprising



a first fluid container supported from the east side of said base;

a second fluid container supported from the west side of said base;

a fluid supply sufficient for filling one of said containers;

a fluid pump interconnected between said container by means of a flexible conduit for selectively transferring all of said fluid supply to one of said containers, said pump being controlled in response to the output of said detector means; and

an electromechanical brake responsive to said detector means for controlling the movement of said fluid containers;

heat exchanger means within said particulate material for collecting the heat absorbed by said material; and

means for circulating fluid in a closed system between said heat exchanger means and said building structure.

4,365,618

HELIOSTATIC SOLAR ENERGY CONVERSION SYSTEM

Dedger Jones, 3451 Stonehaven Ct., South, Columbus, Ohio 43220

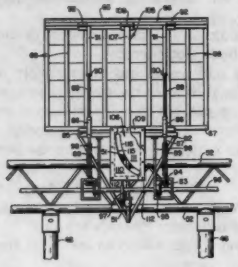
Filed Dec. 5, 1980, Ser. No. 213,210
Int. Cl.³ F24J *3/02*; A63G *21/00*
U.S. Cl. 126—425 **9 Claims**

1. A solar energy conversion system including a field of a plurality of heliostats, a plurality of light reflecting facets on each heliostat, a central receiver a selected distance apart from said heliostats, and positioning means to position each heliostat to focus the rays of the sun on the central receiver, comprising:

(a) at least one platform supporting a plurality of heliostats with each heliostat constituting a frame having edges and supporting a plurality of reflecting facets fixidly positioned on the frame, which in combination comprise a multi-faceted composite parabolic heliostat surface, with each heliostat focused on the central receiver;

(b) each platform being constructed of at least one truss member curved to substantially match a circumferential curve with respect to the central receiver, each platform being moveable in a substantially circular path in a horizontal plane about the central receiver as a center, at least one of the curved truss members being supported by a

plurality of rollers mounted on supporting means in the ground; and



(c) each frame pivotally mounted on a platform for movement about two axes, one axis generally tangential to the circumferential curve, and the other axis generally perpendicular to the horizontal plane.

4,365,619

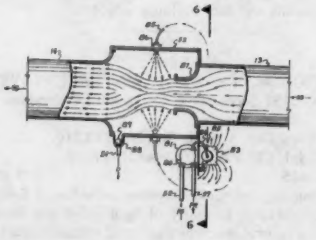
SOLAR ENERGY SYSTEM FOR HEATING AND COOLING OF BUILDINGS UTILIZING MOIST AIR CYCLES

Edward M. Holbrook, 1012 Charity Dr., Virginia Beach, Va. 23455, and Joseph J. Wallace, 1212 King Arthur Dr., Chesapeake, Va. 23323

Division of Ser. No. 878,510, Feb. 17, 1978, Pat. No. 4,182,406. This application Sep. 24, 1979, Ser. No. 77,907

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—428 **2 Claims**



1. For use in a building structure heating system utilizing solar energy and including a solar energy collector, duct means for carrying heated circulatory fluid in the form of moist air to a heat storage tank, and duct means for returning cooled circulatory fluid in the form of moist air from said heat storage tank to said solar energy collector, a fog nozzle-spray pump assembly incorporated in said duct means for returning cooled circulatory fluid in the form of moist air from said heat storage tank to said solar energy collector operable to spray water into said flow of moist air returning from said heat storage tank to said solar energy collector to change the same into a mixture of saturated air and liquid water in the form of a fog.

4,365,620

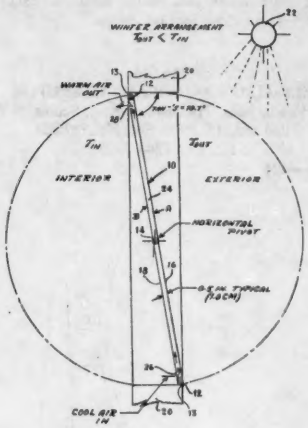
REVERSIBLE WINDOW FOR SOLAR HEATING AND COOLING

Emmanuel E. Bliamptis, 20 Phinney Rd., Lexington, Mass. 02173

Continuation of Ser. No. 937,019, Aug. 25, 1978, abandoned. This application Aug. 12, 1980, Ser. No. 177,336

Int. Cl.³ F24U *3/02*

U.S. Cl. 126—429 **3 Claims**



1. In a building structure having a wall of a given thickness and an aperture therein for accommodating a window, the improvement residing in a window in the form of a transparent insulating building panel, said transparent, insulating building panel being reversibly mounted for positioning in said wall commensurate with the outside temperature and having a first set inclination position and a second set inclination position, said transparent, insulating building panel comprising:

a frame having a thickness substantially less than the thickness of said wall, said frame being structured to fit substantially in register with said aperture,

means for pivotably mounting said frame in said aperture about a horizontal axis at the center of said wall, the first frame set inclination position being oriented such that the upper edge of said frame is proximate to the upper interior edge of said aperture and the lower edge of said frame is proximate to the lower exterior edge of said aperture, and the second frame set inclination position being oriented such that the upper edge of said frame is proximate to the upper exterior edge of said aperture and the lower edge of said frame is proximate to the lower interior edge of said aperture,

a pair of spaced apart transparent panels mounted within said frame, one of said transparent panels being capable of transmitting visible and infrared radiation while the other of said transparent panels is capable of transmitting visible radiation and reflecting infrared radiation,

means remote from said horizontal axis for providing passageways from the space between said pair of transparent panels with the outer side of said other of said transparent panels capable of reflecting infrared radiation; and

means for sealing said frame to said wall at said first and second frame set inclination positions.

4,365,621

DEVICE FOR MEMBERS FOR CLOSING BODY PASSAGES

Jan-Olof Brundin, Lindingö, Sweden, assignor to AB Medline, Stockholm, Sweden

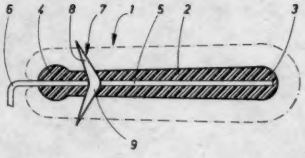
PCT No. PCT/SE80/00130, § 371 Date Jan. 4, 1981, § 102(e) Date Dec. 23, 1980, PCT Pub. No. WO80/02369, PCT Pub. Date Nov. 13, 1980

PCT Filed May 5, 1980, Ser. No. 227,068

Claims priority, application Sweden, May 4, 1979, 7903886-5

Int. Cl.³ A61M *31/00*

U.S. Cl. 128—1 R **10 Claims**



1. A device for the temporary or permanent closing of a body passage or cavity in humans and animals, comprising: a member of a material which swells at least 20% when absorbing body fluids and which is substantially inert to body fluids and surrounding tissue, said member being dimensioned so as to be able to be introduced without any substantial pressure against the walls of the passage or cavity in the unswollen state of the member but to take up the whole cross-section of the passage or cavity in the swollen state and then to be held by pressure against the surrounding wall of the passage or cavity, at least one element incorporated in said device and having a number of external portions extending from a center portion of said element and provided with free ends, the element having its center portion and the innermost parts of the extending portions embedded in said member while the free ends of said portions extend outside the member at least in the unswollen state of the member, said portions being made of a material with such suitable stiffness that said portions spread out in a yielding manner towards the surrounding walls of the passage or cavity in such a manner that the portions tend to lock the member in its introduced position by pressure against the walls by means of said ends, with adaption to the passage or cavity, which ensures securing of the member even before it has developed any direct pressure against the surrounding walls due to its swelling.

4,365,622

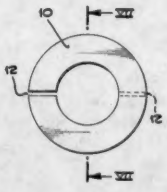
MULTIPLE PLATE RESONANT ELECTRODE

William H. Harrison, Woodland Hills, Calif., assignor to Donald L. Morton & Associates, Los Angeles, Calif.

Filed Sep. 11, 1980, Ser. No. 186,391

Int. Cl.³ A61N *1/42*

U.S. Cl. 128—1.3 **3 Claims**



1. A self-resonant single-turn electrode for use in the treatment of animal tissue by hyperthermia by coupling the electrode to a supply of radio frequency energy, the electrode comprising:

a plurality of planar members of electrically conductive material shaped in the form of annular discs, said annular discs each having a single slit radially therethrough to form a gap, said discs being stacked concentrically and insulated from one another with dielectric material disposed therebetween, said gap of each of said discs being disposed 180° from the next adjacent ones of said discs, one of said discs having means associated therewith for operative attachment to a supply of radio frequency energy.

4,365,623

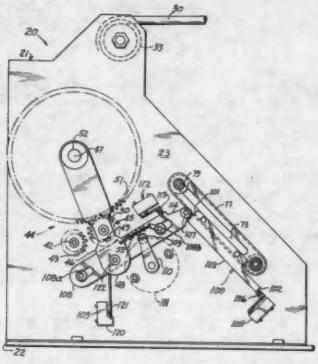
APPARATUS TO EXERT TRACTION IN TRACTION THERAPY

Tru G. Wilhelm, La Quinta; Heinz C. Ross, Fallbrook, and Bradley T. Wilhelm, Murrietta Hot Springs, all of Calif., assignors to Tru-Eze Manufacturing Co., Temecula, Calif.

Filed Mar. 6, 1980, Ser. No. 127,874

Int. Cl.³ A61H *1/02*

U.S. Cl. 128—75 **20 Claims**



1. Apparatus for exerting traction force in traction therapy, said apparatus comprising;

a flexible line by means of which said force is to be exerted;

drive means to which said line is engaged for pulling in and paying out said line;

a motor operatively engaged to said drive means;

motor control means operatively interposed between said motor and a source of energy for driving said motor, said motor control means having a first and a second control condition for respectively causing said motor to pull in or to pay out said line, and a third control condition where it does neither;

tension sensing means responsive to tension exerted on said line and adapted to provide a signal which is proportional to the value of said tension;

program means comprising circuitry defining a predetermined sequence of motor operations to establish a predetermined sequence of tension values on said line, said program means being operationally coupled to said tension sensing means and to said motor control means to cause said motor control means sequentially to assume appropriate ones of its control conditions so as to attain said predetermined sequence of tension values in said line; and

transmission means including a clutch interposed between said motor and said drive means, and a cam and a cam follower interposed between said clutch and said tension sensing means, said cam and cam follower being so constructed and arranged as to hold said clutch engaged when there is tension in said flexible line above some minimum value.

4,365,624

EXTERNAL BONE-ANCHORING ELEMENT

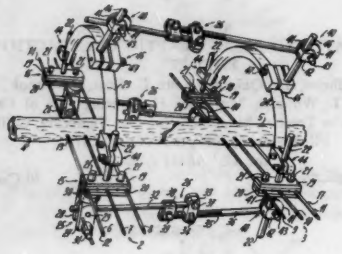
Henri Jaquet, Le Grand Saconnex, Switzerland, assignor to Jaquet Orthopedie SA, Switzerland

Filed Dec. 27, 1979, Ser. No. 107,546

Claims priority, application Switzerland, Jan. 16, 1979, 386/79

Int. Cl.³ A61F 5/04

U.S. Cl. 128—92 A 39 Claims



1. An external bone-anchoring means, comprising two groups of pins, each group being comprised of at least one pin, or the like, for retaining a bone portion, at least one assembly rod for interconnecting the two groups, and at least one arcuate member of polygonal cross-section connected to the assembly rod adjacent one of the groups of pins, the arcuate member having no discontinuities over its length and having a uniform cross-section over its length for enabling the assembly rod to be connected to the arcuate member anywhere along its length.

4,365,625

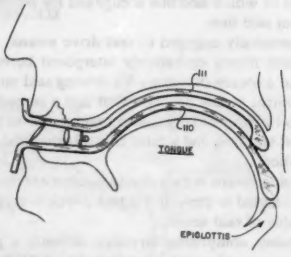
EXPANDABLE ORAL AIRWAY

Bruce Rind, 706 NE. 8th Ave., Aberdeen, S. Dak. 57401

Continuation-in-part of Ser. No. 188,172, Sep. 17, 1980. This application Apr. 20, 1981, Ser. No. 255,395

Int. Cl.³ A61M 16/00, 29/00

U.S. Cl. 128—207.14 9 Claims



1. In an expandable oral airway having two elongated airway forming members each having a curved one end portion adapted to fit the contours of the mouth and pharnyx of a throat of a patient for effecting insertion and removal of the one end portion of both into and out of the throat of a user and with one member configured to be disposed below the other member, means connecting the two members for pivotal movement in response to a force applied at the other end portions of the members from a contracted state to at least one expanded state, wherein the one end portions are spaced apart relative to the contracted state and holding means disposed on the other end portion of one of said members for releasably holding the other of said members such that the members are maintained in said at least one expanded state, the improvement wherein each other end portion of the two elongated airway forming members has a straight section, said straight sections being substantially parallel and in spaced apart relation and wherein the connecting means comprises hinge means at the straight sections including a first rigid element hingedly connected to each airway forming member and substantially perpendicular to both when the airway is in the contracted state and a second rigid element hingedly connected to each airway forming member and extending diagonally therebetween, said second rigid element being disposed between the first rigid element and said holding means and wherein the spacing between the hinge connections of said first and second rigid elements to said airway members is greater at said one airway forming member.

4,365,626

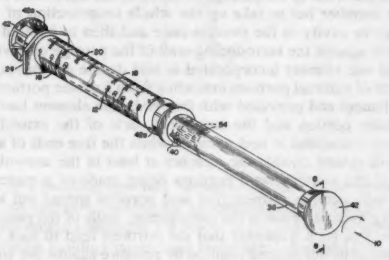
UNIVERSAL SYRINGE

Hugh A. House, 159 Lincoln Rd., Wenonah, N.J. 08090

Continuation-in-part of Ser. No. 88,141, Oct. 25, 1979, abandoned. This application Jul. 9, 1981, Ser. No. 281,842

Int. Cl.³ A61M 5/00

U.S. Cl. 128—218 DA 10 Claims



1. A universal syringe for the application of liquid medicaments comprising, in combination;

(a) an elongated cylindrically-shaped vial having outwardly extending lip portions proximate each end thereof and identical piston seals disposed proximate each cylinder end, said piston seals being in intimate frictional contact with the internal walls of said vial and slidable therealong, said vial being adapted to retain said liquid medicament therein;

(b) a slidable finger rest encompassing the outer wall of said vial and movable therealong until restrained by said lip portions;

(c) cap means adapted to be received on each end of said vial to maintain its sterility; and

(d) a needle assembly means, said needle assembly means including;

(i) a needle having one end adapted to be inserted into a patient and the other end thereof adapted to be removably retained by either of said vial lips while piercing said piston seal and communicating with said medicament disposed within said vial, and

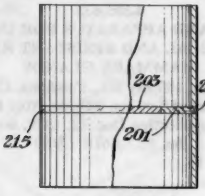
(ii) elongated cylindrically-shaped piston rod means, said piston rod means being hollow and adapted to removably receive said needle therein and when said needle is removed therefrom after being inserted into a piston seal, is adapted to be received by the remaining piston seal to function as a piston rod.

4,365,627

FILTER-TYPE RESPIRATOR CANISTER

Richard E. Wing, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Sep. 22, 1980, Ser. No. 189,446
Int. Cl.³ A62B 7/00
U.S. Cl. 128—202.22 3 Claims



1. An improved filter-type respirator canister having a housing which has an air inlet; an air outlet; a bed of filtering material, capable of removing one or more air impurities, located within the housing and between the air inlet and the air outlet; and an end-of-service life warning device having an indicator which changes color when exposed to air impurities;

wherein the improvement comprises:

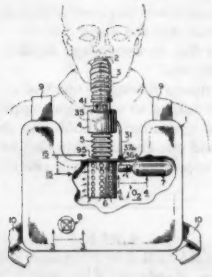
the end-of-service life warning device having a solid center and an air permeable peripheral edge positioned transverse to air flow passage through the housing and attached to and supported by the housing whereby all of the air flowing through the device flows through the peripheral edge of the device; and at least a portion of said peripheral edge containing an indicator which changes color when exposed to air impurities; and said housing being transparent at least adjacent to said indicator whereby said indicator is visible from the exterior of said canister.

4,365,628

AVALANCHE SURVIVAL VEST

Carl F. Hodel, 1720A Paula Dr., Honolulu, Hi. 96816

Filed Jul. 28, 1980, Ser. No. 173,127
Int. Cl.³ A62B 7/02
U.S. Cl. 128—205.12 6 Claims



1. A breathing apparatus comprising in combination:

an air reservoir bag to be worn around the users chest or back,

an inhalation duct having one end connected to said reservoir bag, a mouthpiece connected to the other end of said inhalation duct,

a CO_2 absorber chamber mounted within the reservoir bag between the inhalation duct and the reservoir air supply to absorb CO_2 from the recycled air,

a special set of external breathing ports in said inhalation duct near said mouthpiece to allow breathing of external atmospheric air,

valve means slidably mounted over said ports from a first position in which said ports are open to atmosphere to a second position closing said ports,

a cylinder of compressed breathing gas attached to the reservoir bag, said cylinder having a puncturable cap, a spring loaded puncture pin mounted adjacent said cap to puncture said cap when activated,

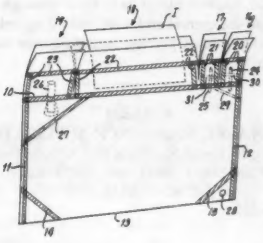
a bite activation means consisting of lever arms built into the mouthpiece and a mechanical cable mechanism connected between said lever arms and said valve means to instantly release the external breathing port valve cover and close the external ports and between said lever arms and said spring loaded puncture pin to simultaneously release said spring loaded puncture pin which will open the compressed breathing gas cylinder allowing the breathing gas to fill the reservoir bag.

4,365,629

PLATELET FREEZING BAG

James H. Pert, Glenmont, N.Y.; Peter Unger, Stockholm, Sweden; Hervie L. Harris, East Greenbush, and James C. Pert, Glenmont, both of N.Y., assignors to Hedbergska Stiftelsen, Stockholm, Sweden

Continuation of Ser. No. 42,797, May 29, 1979, abandoned. This application Oct. 17, 1980, Ser. No. 197,898
Int. Cl.³ A61M 5/00
U.S. Cl. 128—214 D 1 Claim



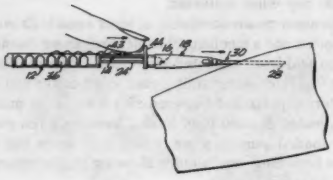
1. A freezing bag useful for platelet freezing comprising two pliable layers of polymeric material, said layers defining between them a sealed compartment for receiving platelets to be placed therein for freezing, two needle ports at one end of the sealed top edge of said compartment for introducing material into said compartment, a draining port positioned between said layers at the other end of the sealed top edge of said compartment, the lower end of said draining port extending into said compartment below the sealed top edge thereof being slit longitudinally along two diametrically opposed lines, said two layers of polymeric material being additionally sealed diagonally below said lower end of said draining port to prevent contact of the contents of said compartment with said draining port, the seal thus-provided being burstable, three sealed tabs, said tabs being adapted upon being pulled apart to uncover respectively said needle and said draining ports, said tabs consisting of portions of said pliable layers of polymeric material extending beyond the sealed top edge of said compartment where said needle ports are positioned, said compartment being sealed at the two bottom corners thereof with a diagonal seal to facilitate post-thaw mixing of platelets introduced into said compartment for freezing and a hole provided through said freezing bag at the corner thereof diagonally opposite from said draining port and positioned such that the corresponding bottom diagonal corner seal is located between said hole and the interior of said compartment.

4,365,630

FLASHBACK CHAMBER FOR CATHETER

Richard H. McFarlane, 2571 Kaneville Rd., Geneva, Ill. 60134

Filed Mar. 10, 1981, Ser. No. 242,383
Int. Cl.³ A61M *5/00*
U.S. Cl. 128—214.4 **17 Claims**



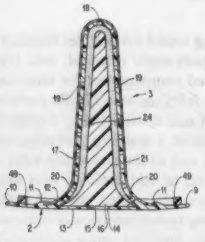
1. An improved flashback structure for a catheter, said structure comprising; a main body portion including wall means defining a cavity; a member slidably engaged on said main body portion; means, within said cavity, defining a small cross sectional area blood path, said means defining said blood path comprising septum means defining a chamber maze within said body, an elongate hollow needle including a major forwardly extending length exteriorly of said main body portion; means securing said hollow needle to said main body portion, said needle terminating at a sharpened distal end, and including a minor rearwardly extending length secured within said main body portion; said hollow needle being in open communication with the interior of said flashback chamber structure cavity, whereby a fluid, such as blood, will flow through said hollow needle from said sharpened end, and into filling relation of said blood path, and said body portion including vent means to vent the blood path.

4,365,631

FLOWABLE SUBSTANCE APPLICATOR

Larry H. Kline, 18 Broad St., Suite 805, Charleston, S.C. 29401

Filed Sep. 8, 1981, Ser. No. 300,027
Int. Cl.³ A61M *3/00*
U.S. Cl. 128—235 **51 Claims**



1. A device for holding a flowable substance and applying said flowable substance to an orifice of a body comprising an applicator section comprising:

a. a nozzle, sized and shaped to fit within said orifice of said body, with a sloped base, an elongated section, and a plurality of openings in said sloped base and said elongated section;

b. a plunger section within said device, sized and shaped to fit within said sloped base and said elongated section of said nozzle, extending from said sloped base of said nozzle toward said tip of said nozzle; and

c. said nozzle and said plunger section being spaced apart to form a cavity which is sized and shaped to fit between said nozzle and said plunger section from said sloped base through said elongated section, said cavity operative to hold said flowable substance,

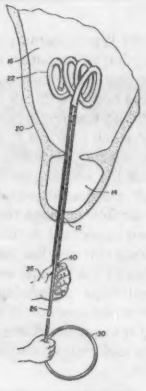
whereby when said nozzle is placed in said orifice and said plunger section is pressed toward said tip of said nozzle, said flowable substance will be forced from said cavity through said plurality of openings in said nozzle and out from said device into said orifice.

4,365,632

METHOD AND APPARATUS FOR INDUCING IMMUNOLOGICAL AND RESISTANT RESPONSE IN MAMMARY GLANDS

William M. Kortum, 180 Ely Rd., Petaluma, Calif. 94952

Continuation-in-part of Ser. No. 903,343, May 5, 1978, Pat. No. 4,202,329. This application Dec. 12, 1979, Ser. No. 102,795
Int. Cl.³ A61B *17/00*
U.S. Cl. 128—303 R **10 Claims**



1. A kit inhibiting bacterial infection in an udder of a milk-producing domestic animal comprising:

a plastic non-toxic antigenic device comprising an elongate cylinder having at least one end tapered so that said end may be inserted into the udder through the teat sphincter and be retained in the gland cistern;

means comprising a straight hollow tube for introducing said device into the udder; and

means comprising a rod disposed within said tube for inserting said device into the gland cistern;

said device having an appendage capable of being drawn into said tube; and

said inserting means having at one end of said rod a clasp means for attaching to said device appendage, said clasp means being operative to hold said device appendage whenever said one end is within said tube and to release said device appendage whenever one end is external said tube.

4,365,633

PATIENT-OPERATED PACEMAKER PROGRAMMER

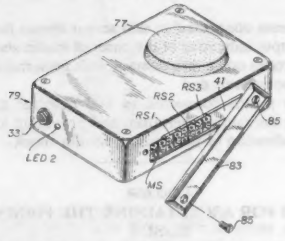
James Loughman, Randwick; Christopher N. Daly, Bilgola Plateau, and Ronald A. C. Washington, Seaforth, all of Australia, assignors to Telectronics Pty. Ltd., Lane Cove, Australia

Filed Feb. 22, 1980, Ser. No. 123,916
Int. Cl.³ A61N *1/36*
U.S. Cl. 128—419 PG **23 Claims**

1. A programming system for a pacemaker, said pacemaker having at least one parameter characteristic of its operation whose value can be changed by an external programming source, said parameter being changeable to any one of a predetermined number of discrete values, comprising:

a physician-operated programmer for transmitting signals to said pacemaker, having manually adjustable means for controlling the changing of said parameter to any selected value of said predetermined number of discrete values; and

a patient-operated programmer for transmitting signals to said pacemaker, having manually adjustable means for controlling the changing of said parameter to any selected value of a group, smaller than said predetermined number, of discrete values,



whereby a patient can control his pacemaker to change to a state selected from a sub-set of the set of states under control of the physician,

said patient-operated programmer including means, normally under control of a physician, for pre-selecting those parameter values in said predetermined number of discrete values which are included in said group, whereby a physician can pre-select those states in the set under his control which are included in the sub-set under control of the patient.

4,365,634

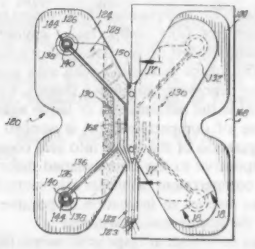
MEDICAL ELECTRODE CONSTRUCTION

Rex O. Bare, and Earl F. Robinson, both of Lawerance, Kans., assignors to C. R. Bard, Inc., Murray Hill, N.J.

Filed Dec. 6, 1979, Ser. No. 100,904

Int. Cl.³ A61B 5/04

U.S. Cl. 128—640 **9 Claims**



1. A multi-terminal, disposable medical electrode construction of the type adapted to be adhered to the skin of a patient for operative connection to electrical apparatus such as an electrocardiograph, an electromyograph, nerve or muscle stimulator, or the like, said multi-terminal electrode construction comprising, a pair of separate support members, each having one or more apertures formed therein, and one surface thereof including at least a partial adhesive coating for adhering the electrode to the skin of a patient; a single, semi-flexible sheet of plastic-like material affixed to an opposite surface of each said separate support member; terminal means for transmitting electrical signals on said semi-flexible sheet material, said terminal means providing terminal portions corresponding in number to, and in positional alignment with the apertures formed in said separate support members, such that the respective support members of said multi-terminal electrode construction are effectively joined in assembled relation by said semi-flexible sheet, with said sheet providing a hinge between the respective separate support members, enabling the support members to flex independently with respect to each other to conform to the contour of the patient.

4,365,635

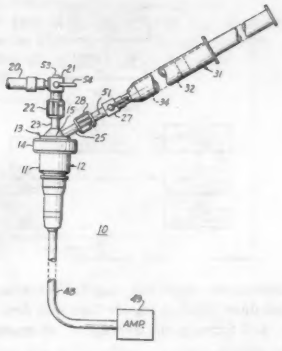
PRESSURE TRANSDUCING METHODS AND APPARATUS

Ronald Bowman, Laguna Beach, Calif., assignor to Bell & Howell Company, Chicago, Ill.

Filed Mar. 3, 1981, Ser. No. 239,921

Int. Cl.³ A61M 5/00

U.S. Cl. 128—675 **25 Claims**



1. In a method of keeping gas bubbles out of a circulatory system of a living organism connected via a catheter insertible into said circulatory system to a recipient device having a circular cavity connected to said catheter and tending to retain gas bubbles, the improvements comprising in combination the steps of:

providing at said circular cavity an opening for injection of said compatible solution;

providing in said circular cavity a pocket communicating with said opening;

injecting said compatible solution through said opening into said pocket in said circular cavity;

forming a undirectional jet of said injected solution by blocking flow of said injected solution at a closed end of said pocket, thereby forming a pressure head in said pocket, and by ejecting said injected solution through an outlet of said pocket;

sweeping said ejected solution in a swirling motion along a boundary of said cavity, thereby wiping gas bubbles from said boundary; and

bleeding gas from said wiped gas bubbles out of said circular cavity.

4,365,636

METHOD OF MONITORING PATIENT RESPIRATION AND PREDICTING APNEA THEREFROM

Kent R. Barker, Cottage Grove, Minn., assignor to Medicon, Inc., Minneapolis, Minn.

Filed Jun. 19, 1981, Ser. No. 275,343

Int. Cl.³ A61B 5/08

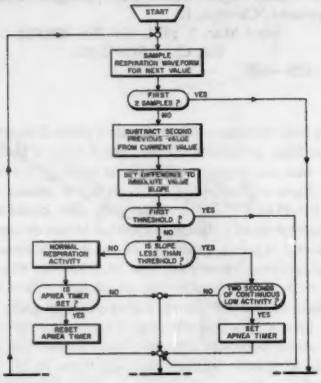
U.S. Cl. 128—716 **23 Claims**

1. A method of monitoring waveforms indicative of patient respiration and activating an alarm upon occurrence of predetermined respiration conditions indicative of apnea, comprising the steps of

(a) monitoring a respiration waveform and forming a value representative of the instantaneous magnitude of said waveform at regular and continuous time intervals;

(b) continuously forming the difference between each such value and at least the second previous such value, and developing therefrom a value representative of the instaneous slope of said waveform;

(c) collecting such slope values for a first predetermined time which is at least as long in time as one respiration cycle and selecting from the collected slope values the maximum collected slope value;



(d) continuously repeating step (c) for a second predetermined time which is longer than said first predetermined time, and forming the average of all maximum collected slope values;

(e) forming a threshold value by selecting a predetermined fraction of said average of step (d);

(f) comparing subsequent slope valves as found in step (b) with said threshold value of step (e) and activating said alarm when said subsequent slope values are less than the threshold value of step (e) for longer than a third predetermined time.

4,365,637

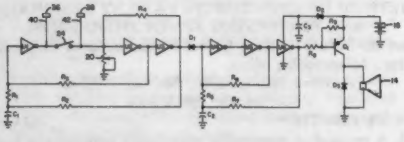
PERSPIRATION INDICATING ALARM FOR DIABETICS

Wilton C. Johnson, Hopkins, Minn., assignor to Dia-Med, Inc., Hopkins, Minn.

Continuation-in-part of Ser. No. 54,820, Jul. 5, 1979, abandoned. This application Sep. 29, 1980, Ser. No. 191,699

Int. Cl.³ A61B 5/05

U.S. Cl. 128—734 **5 Claims**



2. Apparatus contained in a wrist watch type case constructed and arranged for attachment to the wrist of a diabetic for detecting the onset of insulin shock comprising, in combination:

sensor means constructed and arranged for application to the skin of the wearer; said sensor means comprising a pair of planar electrodes mounted on the back of the case of the apparatus and insulated from each other and said case, said electrodes also being recessed into the back of said case, whereby said case when attached to the arm of the wearer does not bring said electrodes into direct contact with the skin of the wearer, and further whereby said electrodes come into direct contact with perspiration forming on the skin of said wearer in the event of the onset of insulin shock;

detector means connected to said sensor means for providing an output indicative of the onset of insulin shock when the electrodes come into contact with perspiration on the skin of the wearer; and

annunciator means connected to said detector means for receiving the output therefrom and providing an audible output indication of the onset of insulin shock.

4,365,638

APPARATUS FOR ASCERTAINING THE FIRMNESS OF TISSUE

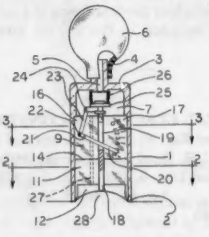
Jean-Luc M. Leveque, Montfermeil, and Andre H. Abrioux, Drancy, both of France, assignors to L'Oreal, Paris, France

Filed Jan. 26, 1981, Ser. No. 228,443

Claims priority, application France, Feb. 1, 1980, 80 02216

Int. Cl.³ A61B 10/00

U.S. Cl. 128—774 **23 Claims**



1. In apparatus for ascertaining the firmness of tissue which apparatus comprises: (a) a compartment having an open base capable of being applied on the tissue whose firmness is to be ascertained; (b) means associated with said compartment (a) for establishing depressurized suction therein, which means are effective to cause the deformation of tissue against which the said open base of compartment (a) is applied into a dome-shaped configuration of the tissue into said compartment; and (c) means responsive to the dome-shaped deformation of the tissue of said compartment (a) under said suction effect which are adapted to display an indication responsive to said tissue deformation; the improvement wherein

(i) said tissue deformation-responsive means (c) comprises an elongate plunger in said compartment (a); there being

(ii) means within said compartment (a) for mounting said plunger (i) therein for longitudinal displacement thereof perpendicularly to the tissue under the effect of its own deformation;

(iii) display means cooperative with and indicative of the displacement of said plunger (i) relative to extent of tissue deformation into said compartment (a);

(iv) means operatively connecting said plunger (i) with said display means (iii); and

(v) means enabling the visualization and seeing of said display means (iii) from the outside of said compartment (a) in order to facilitate the appreciation and reckoning of the position of the display means in its relative responsiveness to the displacement of said plunger (i).

4,365,639
CATHETER, CARDIAC PACEMAKER AND METHOD OF PACING

Bruce N. Goldreyer, Rancho Palos Verdes, Calif., assignor to Applied Cardiac Electrophysiology, San Pedro, Calif.

Continuation-in-part of Ser. No. 119,406, Feb. 7, 1980, abandoned. This application Mar. 11, 1981, Ser. No. 242,705

Int. Cl.³ A61O *1/04*

U.S. Cl. 128—786 **42 Claims**

1. An electrode system for a cardiac pacer comprising a catheter in the form of a single nondiverging filament for insertion into a heart through the vascular system and including in combination:

first stimulating electrode means at the distal end of said catheter for positioning the apex of the right ventricle;

second sensing electrode means on said catheter and spaced from said stimulating electrode means for positioning adjacent the wall of the heart atrium and producing signals varying as a function of the cardiac P wave and including at least first and second electrodes mounted in the wall of said catheter equidistant from said distal end and insulated from each other and providing a bipolar signal to said cardiac pacer; and

electrical conductor means for connecting said sensing electrode means to a cardiac pacer providing said signals as input and for connecting the output of a pulse generating unit of the cardiac pacer to said stimulating electrode means.

4,365,640
EQUIPMENT FOR SMOKING SMOKABLE OBJECTS

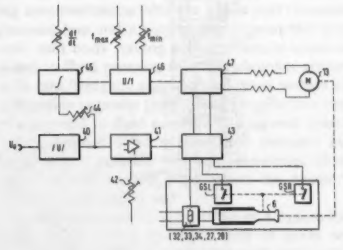
Hans-Walther Lorenz, Hamburg, and Gerd Schumacher, Pinneberg, both of Fed. Rep. of Germany, assignors to B.A.T. Cigaretten-Fabriken GmbH, Hamburg, Fed. Rep. of Germany

Filed Oct. 6, 1980, Ser. No. 194,353

Claims priority, application Fed. Rep. of Germany, Oct. 4, 1979, 2940280

Int. Cl.³ A24F *13/00, 13/22*

U.S. Cl. 131—330 **10 Claims**



1. An apparatus for simulating a human smoking a smokable object comprising:

(a) inhaling means for drawing smoke from said object;

(b) motor means coupled to said inhaling means for driving said inhaling means; and

(c) control circuit means for controlling the operation of said motor means, said control means including means for receiving an analog signal corresponding to a human draw profile of the smoking of the object, converter means coupled to said receiving means for converting said analog signal to a pulse signal and switching means for applying said pulse signal to said motor means for controlling the operation of said motor means.

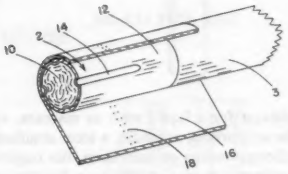
4,365,641
CIGARETTE FILTER

Robert R. Johnson, Louisville, Ky., assignor to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Continuation-in-part of Ser. No. 29,230, Apr. 11, 1979. This application Mar. 12, 1981, Ser. No. 243,168

Int. Cl.³ A24D *3/00, 3/04, 3/18*

U.S. Cl. 131—336 **25 Claims**



1. A filter cigarette whose filter comprises a porous plug affixed to the end of a cigarette for drawing smoke from the cigarette through the plug, and a plurality of between three and seven ventilating air ducts positioned and distributed circumambiently around said plug, each of said ducts having an air egress opening at the mouth end of the filter and having an air ingress opening exteriorly of the filter cigarette located remote from said end along the filter, said duct being otherwise closed to prevent the ingress of smoke thereto whereby ventilating air is the only gas flowing through said ducts, said filter being additionally characterized by the equation:

$$K = \frac{UA_f}{100n} - A_v$$

wherein K is a number greater than 0.035, A_v is the average cross-sectional area of the individual ducts, A_f is the total cross-sectional area of the filter, n is the number of ducts, and U is the percent ventilation air for the total flow rate through the filter which is between about 60 and about 95 and is defined by the equation:

$$U = \frac{100q_v}{q_v + q_s}$$

wherein q_v is the total flow rate through the ducts and q_s is the flow rate through the plug, and wherein the filter is further characterized by the equation:

$$A_v/A_f < 0.01$$

whereby substantial dispersion of the smoke drawn through the filter is obtained within about a one centimeter distance from the end of the filter when drawn at the rate of 17.5 cc./sec.

4,365,642

COSMETIC APPLICATOR AND ASSOCIATED METHOD

Allan Costa, 23 Horseshoe Rd., Old Westbury, N.Y. 11568

Continuation-in-part of Ser. No. 156,652, Jun. 5, 1980. This application Jan. 8, 1981, Ser. No. 223,337

Int. Cl.³ A45D *40/30*

U.S. Cl. 132—88.5 15 Claims

1. In an applicator for a liquid such as mascara, eyebrow lotion or the like comprising a handle, a stem attached to the handle and applicator means on said stem, the improvement wherein said applicator means comprises a flexible tape element secured to said stem and including a plurality of filaments projecting from said tape element and extending entirely around said stem, said filaments being of hook shape and oriented randomly on said tape element for holding droplets of liquid by surface tension of the liquid and for applying the liquid to the hair by contacting the hook shape filaments holding the liquid droplets to said hair to break the surface tension and comb means on said tape element integrated with said hook shape filaments and operatively positioned with respect thereto for combing the hair after application of the liquid by said filaments.

4,365,643

FUSE DEVICE FOR A WHEEL EQUIPPED WITH A PNEUMATIC TIRE

Jean Masclet, Paris, and Roger Papay, Bourg-la-Reine, both of France, assignors to Messier-Hispano-Bugatti, Montrouge, France

Filed Nov. 3, 1980, Ser. No. 203,540

Claims priority, application France, Nov. 13, 1979, 79 27878

Int. Cl.³ F16K *17/38, 17/14*

U.S. Cl. 137—70 4 Claims

1. A fuse device for deflating a pneumatic tire in response to an excessive increase in pressure, comprising a screw member having a head and a channel therethrough;

said channel including first, second and third bores of small, medium and large cross-sections, respectively;

at least one transverse air evacuation passage extending from said second bore to the outside of said device in said head;

a piston slidably mounted in said channel, said piston including two parts of different cross-sections corresponding to said first and second bores;

one of said parts being relatively large and being slidably disposed in said second bore;

the other of said parts being smaller and slidably disposed in said first bore;

said smaller part having a peripheral groove;

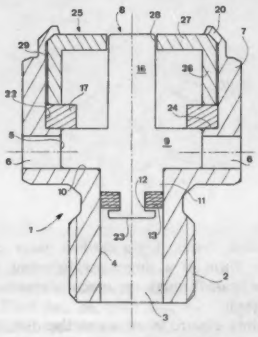
a gasket in said groove adapted to prevent escape of air through said lateral passage;

said large part of said piston including a projecting section extending into said third bore;

a cylindrical stop member in said third bore;

said stop member including at one end thereof an opening receiving said projecting section, and, at its other end, a peripheral shoulder; and,

an annular disk in said third bore between said large part of



said piston and said peripheral shoulder, said disk consisting of a material capable of breaking up upon the application thereon of a pressure exceeding a predetermined amount;

whereby when said predetermined air pressure against said piston is exceeded said disk breaks up to allow said piston to rise in said third bore and said gasket to enter said second bore thereby allowing air to escape through said transverse passage while fragments of said disk escape through said channel without blocking said channel.

4,365,644

AUTOMATIC TIMER VALVE FOR CONTROLLING THE OUTPUT OF IRRIGATION PLANT

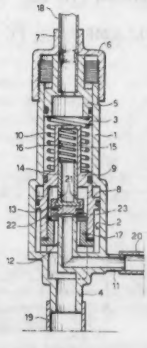
Virginio Maggioni, Rosta, Italy, assignor to Centro Ricerche Fiat S.p.A., Turin, Italy

Filed Apr. 15, 1980, Ser. No. 140,544

Claims priority, application Italy, Apr. 26, 1979, 67880 A/79

Int. Cl.³ F16K *11/14*

U.S. Cl. 137—102 8 Claims



1. An automatic timer valve for controlling the output of an irrigation plant comprising a hollow body having opposing end walls, inlet and outlet means extending through said end walls for communicating the interior of said hollow body with

a source of water under pressure and irrigator outlets, respectively, a one piece differential area piston slidably housed within said hollow body to define with said end walls an inlet chamber and an outlet chamber, a spring disposed in said inlet chamber for urging said piston towards said outlet chamber which is defined by the major diameter part of said piston, drain means extending through said body for connecting said outlet chamber with the outside, passage means extending through said piston to interconnect said chambers and valve means operatively associated with said passage means and said drain means for normally maintaining said passage means open and said drain means closed, whereby upon buildup of a back pressure in said outlet means said piston is moved against the force of said spring causing said valve means to close said passage means and open said drain means thereby communicating said outlet means with said drain means.

4,365,645

THREE-WAY FLOW-REGULATING VALVE

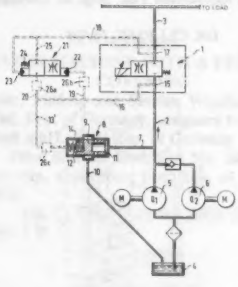
Walter Wohlrab, Weissenburg, Fed. Rep. of Germany, assignor to Krauss-Maffei Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Aug. 18, 1981, Ser. No. 293,990

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1980, 3034377

Int. Cl.³ G05D *11/00*

U.S. Cl. 137—117 **1 Claim**



1. In a system for delivering a fluid to a load and comprising a reservoir, at least two pumps for selectively delivering fluid to said load and connected to a pressure line running to said load, and a throttle valve having an inlet and an outlet and connected in said pressure line for controlling the flow of fluid through said throttle valve, the improvement which comprises a three-way flow-regulating valve assembly for preventing surges in the rate of flow of fluid to said valve resulting from combined delivery of fluid from said pumps, said flow-regulating valve assembly comprising:

a pressure-relief valve having a slidable valve body establishing communication between a first port connected to said pressure line and a second port connected to said reservoir, said body having a first effective cross section exposed to fluid pressure in a first chamber communicating with said first port and a second cross section effective in a direction opposite that of the first effective cross section and exposed to fluid pressure in a second chamber, and a spring isolated from system fluid pressure biasing said body into a position blocking communication between said first and second ports when the pressures in said chambers are equal; and

a two-port two-position servovalve in a bypass loop around said throttle valve having a pair of ports respectively connected directly to said inlet and said outlet, a valve member shiftable between a first position blocking communication between the ports of said servovalve and a second position enabling throttle flow through said servovalve between the port connected to said outlet, said servovalve being provided with fluid pressure control means including a first conduit branch connected to said inlet and effective to urge said member into said second position and another conduit branch connected to said outlet and effective to urge said member into said first position, and a spring biasing said member into said first position, said second chamber being connected with said inlet for pressurization by fluid at the pressure thereof and upstream of the throttle formed by said member in said second position whereby, when the pressure differential across said throttle valve exceeds the biasing force of the servovalve spring, the servovalve moves to the second position thereof to thereby relieve the fluid pressure in said second chamber through said servovalve and allow fluid pressure at said first port to open said pressure-relief valve to admit fluid from said first chamber to said reservoir.

4,365,646

VALVE ASSEMBLY

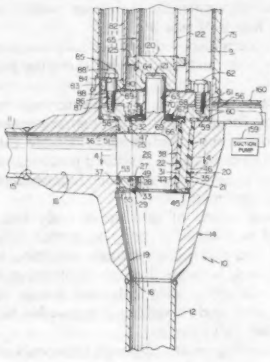
Michael J. Sandling, Barnstaple, England, assignor to Xomox Corporation, Cincinnati, Ohio

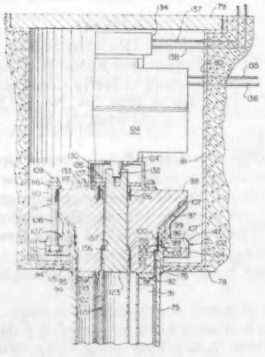
Filed Dec. 22, 1980, Ser. No. 219,346

Claims priority, application United Kingdom, Jan. 8, 1980, 8000539

Int. Cl.³ F16K *5/02*

U.S. Cl. 137—375 **22 Claims**





1. A valve assembly including:

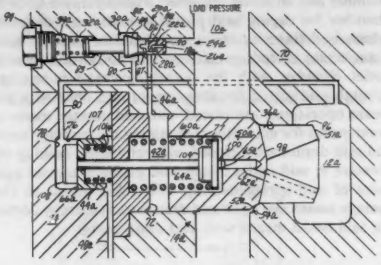
a housing;

a valve unit disposed in said housing for controlling the flow of fluid through said housing;

said housing having an upwardly opening bore to receive said valve unit;
said housing having at least one inlet port and an outlet port communicating with said bore;
said valve unit being removably mounted in said bore of said housing;
said valve unit including a valve body and a rotatable valve member;
said valve body having an upwardly opening bore to receive said rotatable valve member; said valve body providing subjacent support for said rotatable valve member to prevent downward movement of said rotatable valve member with respect to said valve body;
said valve body having at least one inlet port providing communication between said bore in said valve body and said one inlet port in said housing and an outlet port providing communication between said bore in said valve body and said outlet port in said housing;
said rotatable valve member having passage means extending therethrough providing communication between said one inlet port of said valve body and said outlet port of said valve body when said rotatable valve member is in a first position and said passage not providing communication between said one inlet port of said valve body and said outlet port of said valve body to prevent flow therebetween when said rotatable valve member is in a second position;
said housing having tubular extension means extending upwardly therefrom to a location remote from said above said housing;
said valve body having extension means connected thereto and extending upwardly therefrom within said tubular extension means of said housing;
first sealing means disposed between said extension means of said valve body and said tubular extension means of said housing;
rotating means disposed within said extension means of said valve body for actuation at a location remote from said above said housing to rotate said rotatable valve member at least between its first and second positions; said rotating means being upwardly movable independently of said rotatable valve member;
said extension means of said valve body being securely connected to said valve body to permit lifting and removal of said valve unit through said tubular extension means of said housing through application of a lifting force to said valve body extension means with all the lifting force on said rotatable valve member being applied through said valve body;
and second sealing means disposed between said extension means of said valve body and said rotating means.

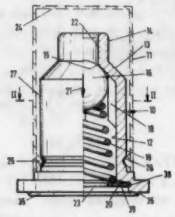
4,365,647
POWER TRANSMISSION
Henry D. Taylor, Pontiac, and Robert H. Breeden, Metamora, both of Mich., assignors to Sperry Corporation, Troy, Mich.
Filed Feb. 4, 1980, Ser. No. 117,934
Int. Cl.³ F16K *31/383*
U.S. Cl. 137—489 **25 Claims**

1. A multiple function hydraulic control circuit comprising:
a. a source of load pressure and a return flow line;
b. a main valve having a metering passage formed therethrough and operable to shut off fluid flow between said source of load pressure and said return flow line;
c. a bleed flow orifice connected to said source of load pressure and to said main valve for restricting fluid flow to said main valve;
d. pilot valve means connected to said source of system pressure and said main valve for metering fluid flow restricted by said bleed flow orifice to said return flow line; and
e. servo means associated with said main valve including a servo piston operatively connected to a source of control pressure and a servo valve engaging said metering passage and operatively associated with said servo piston, said servo valve adapted for movement by said main valve independently of said servo piston, and said servo piston operable



for controlling engagement of said servo valve with said metering passage for metering said restricted fluid flow to said return flow line through said metering passage.

4,365,648
CHECK VALVE
Wolfgang Grothe, Furstenbergstrasse 29, D-7410 Reutlingen, Fed. Rep. of Germany
Filed Sep. 24, 1980, Ser. No. 190,396
Claims priority, application Fed. Rep. of Germany, Oct. 11, 1979, 2941244
Int. Cl.³ F16K *15/04*
U.S. Cl. 137—539 **16 Claims**

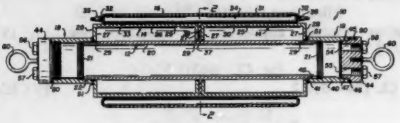


1. A check valve housing having a cylindrical or essentially cylindrical plastic housing comprising an axial liquid inlet at one end thereof and a liquid outlet, a valve ball urged against a valve seat by a prestressed compression spring within said housing, said compression spring resting against a valve bottom connected to said housing, a cylindrical slip on screen telescopically mounted on the said housing and radially spaced from said housing by means of longitudinal ribs, said screen covering at least said liquid inlet of said housing, said valve ball (16) being guided within the inside (12) of said housing (10*a*) by longitudinal guide ribs (18*a*) arranged at the inside wall (17) of said housing.

4,365,649
SEWER PIPE PLUG
Thomas E. Jones, P.O. Box 665, Aldergrove, British Columbia, Canada (V0X 1A0)
Filed Apr. 10, 1981, Ser. No. 252,740
Int. Cl.³ F16L *55/10, 55/12*
U.S. Cl. 138—93 **7 Claims**

1. A sewer pipe plug comprising an inner sleeve having a bore and opposite ends, a pair of outer sleeves longitudinally aligned on the inner sleeve, said pair of outer sleeves each having a cylindrical outer surface and opposite end edges, an inflatable tube mounted on the pair of outer sleeves, said inflatable tube having inner and outer walls interconnected by end

folds to define a chamber, said inner wall being in contact with the cylindrical outer surfaces and having an annular web extending radially inwards between opposite end edges of the pair of outer sleeves, a valve on the inflatable tube for charging



the chamber with pressurized fluid, and clamping means secured to the inner sleeve for applying pressure to at least one of the pair of outer sleeves whereby to clamp the annular web between said outer sleeves and hold the inflatable tube against longitudinal movement.

4,365,650

WEAVING MACHINE WITH A PROTECTIVE COVERING

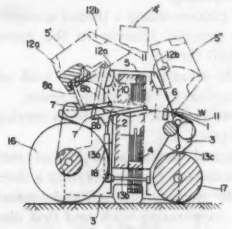
Peter Dornier, Lindau, and Florian Windischbauer, Haslach, both of Fed. Rep. of Germany, assignors to Lindauer Dornier Gesellschaft mbH., Fed. Rep. of Germany

Filed Sep. 18, 1980, Ser. No. 188,290

Claims priority, application Fed. Rep. of Germany, Oct. 9, 1979, 2940824

Int. Cl.³ D03D *49/00*; D03J *1/00*

U.S. Cl. 139—1 R **19 Claims**



1. In a weaving machine with fixed screening surfaces mounted below the plane of weaving and with a movable covering above the plane of weaving and separated from said screening surfaces by a warp-side and cloth-side gap, and with a climate-control system for the space enclosed by the screening and covering surfaces,

the improvement comprising that the movable covering is a rigid hood means open toward the weaving plane and pivotal either

(a) into a rear position, whereby the cloth-side part of the weaving machine with shed and reed and a passage to the warp-side are made accessible in order to remedy ruptures of filling and warp yarns, or

(b) into a front position, whereby the warp-side part of the weaving machine and the heddles are made accessible for changing heddles.

4,365,651

SHUTTLE UTILIZED FOR A CIRCULAR LOOM

Soichi Torii, Kyoto, Japan, assignor to Torii Winding Machine Co., Ltd., Kyoto, Japan

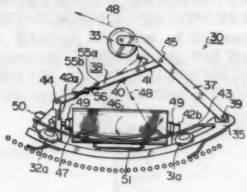
PCT No. PCT/JP79/00303, § 371 Date Jul. 23, 1980, § 102(e) Date Jul. 23, 1980, PCT Pub. No. WO80/01174, PCT Pub. Date Jun. 12, 1980

PCT Filed Nov. 28, 1979, Ser. No. 201,383

Claims priority, application Japan, Nov. 29, 1978, 53-165441[U]; Nov. 29, 1978, 53-165442[U]

Int. Cl.³ D03D *37/00*

U.S. Cl. 139—13 A **6 Claims**



1. A shuttle for weaving a tubular fabric on a circular loom provided with (i) means for guiding said shuttle during the weaving operation, (ii) means for propelling said shuttle along said guiding means, said guiding means comprising an outside annular guide member having a ring shaped guide surface provided with a center axis identical to a central axis of said circular loom and an inside annular guide way concentrically formed about a central axis of said circular loom, said shuttle comprising:

a main body of the shuttle;

a pair of brackets projected from said main body toward the inside of said shuttle;

a first lever rotatably mounted on a first pivot pin at a forward end portion of said main body;

a connecting lever rotatably mounted on one of said brackets located at a rear side of said main body by means of a second pivot pin, said connecting lever being pivoted to said first lever;

an inside guide wheel rotatably mounted on said first lever at a position where said inside guide wheel is capable of engaging with said inside annular guide way when said shuttle is mounted on said circular loom;

guide elements comprising lower outside wheels rotatably provided on a lower part of said main body, each of said outside wheels having a rotating axis inclined upwardly and outwardly when said shuttle is mounted on said circular loom, said outside wheels being supported by said annular guide member in such a manner that said annular guide member bears the force of gravity and the centrifugal force acting on said shuttle when said shuttle is driven by said shuttle propelling mechanism; and

means for holding a bobbin at a position between said brackets and guide elements and capable of smoothly contacting said annular guide member and inside annular guide way.

4,365,652

CROSSING THREAD SUPPLY SYSTEM FOR A WEAVING MACHINE

Bernhard R. Koch, Horgenberg, and Erich Vogelbacher, Horgen, both of Switzerland, assignors to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Aug. 11, 1980, Ser. No. 177,357

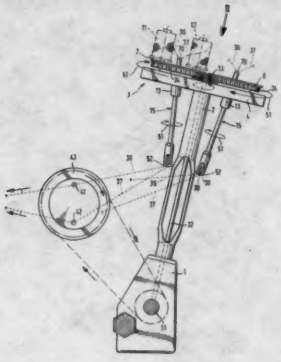
Claims priority, application European Pat. Off., Aug. 16, 1979, 79102987.9

Int. Cl.³ D03C *7/04*

U.S. Cl. 139—50 **11 Claims**

1. A crossing thread supply system for a weaving machine comprising

at least one rotatable disk-shaped element;
a stationary bearing part having said disk-shaped element rotatably mounted thereon and an oblique bore extending therethrough;
a thread reserve bobbin pair mounted on said element;
a thread twisting tube extending from said element through



said bore for receiving and twisting a pair of threads from said bobbin pair upon rotation of said element;
a non-rotational joint between said mandrel and said element to prevent relative rotation between said mandrel and said element; and
a twisting system for receiving the pair of threads from said mandrel for passage to a shed in a weaving machine.

4,365,653

APPARATUS FOR COUPLING A HARNESS-MOTION TO A HARNESS FRAME OF A LOOM

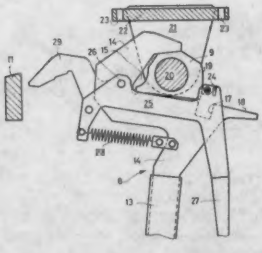
Erhard Freisler, Bubikon, and Paul Haltmeier, Brugg, both of Switzerland, assignors to Ruti Machinery Works Ltd., Ruti, Switzerland

Filed Sep. 23, 1980, Ser. No. 189,822

Claims priority, application Switzerland, Sep. 28, 1979, 8783/79

Int. Cl.³ D03C *13/00, 9/00*

U.S. Cl. 139—88 **12 Claims**



1. An apparatus for coupling a harness-motion to a harness frame of a loom, having a hook, said hook having a jaw with a hook jaw surface adapted to receive a correspondingly shaped counterpiece, and having a resting surface for the counterpiece, said resting surface adjoining the hook jaw surface.

4,365,654

THREAD MONITORING APPARATUS FOR TEXTILE MACHINES

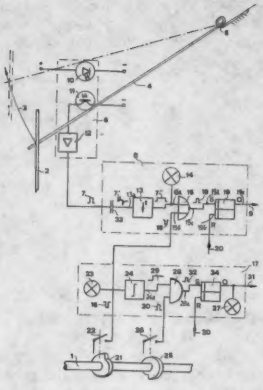
Gabriella F. Viniczay, Steinach, and Kurt Huber, Arbon, both of Switzerland, assignors to Aktiengesellschaft Adolph Saurer, Arbon, Switzerland

Filed Aug. 28, 1980, Ser. No. 182,456

Claims priority, application Switzerland, Sep. 17, 1979, 8373/79

Int. Cl.³ D03D *51/34*

U.S. Cl. 139—370.2 **10 Claims**



1. A weft thread-monitoring apparatus, especially for shuttleless looms, comprising:
a thread feeler encompassing a thread scanner which can be transversely pivoted relative to the movement of the monitored weft thread;
a first electrical circuit arrangement with which there is operatively connected said thread feeler;
said first electrical circuit arrangement serving for generating a fault signal;
said first electrical circuit arrangement including means defining a measuring field generating a thread signal;
said thread feeler moving through said measuring field;
a circuit stage cooperating with said first electrical circuit arrangement for comparison of the thread signal with a machine-controlled reference signal;
said thread scanner comprising a feeler pin which passes in contactless manner through the measuring zone and can be rocked by the weft thread against the action of a restoring spring;
a blocking circuit stage for suppressing a continuous signal generated by the measuring field arranged forwardly of the circuit stage serving for comparison of the thread signal with the machine-controlled reference signal;
a further circuit arrangement to which there is simultaneously infed said machine-controlled reference signal;
said further circuit arrangement serving to generate a further fault signal;
said further circuit arrangement comprising a circuit stage for comparison of the reference signal infed by means of a threshold value switch with at least one further machine-controlled reference signal.

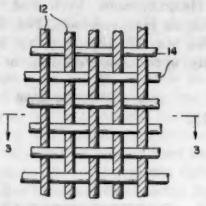
4,365,655
FLAME RETARDANT WOVEN FABRICS

Arthur L. Feinberg, R.F.D. 1, Putnam Valley, N.Y.

Continuation-in-part of Ser. No. 75,430, Sep. 14, 1979, abandoned, which is a continuation of Ser. No. 955,013, Oct. 26, 1978, abandoned. This application Sep. 15, 1980, Ser. No. 186,832

Int. Cl.³ D03D *15/12*

U.S. Cl. 139—426 R 1 Claim



1. A flame retardant woven fabric comprising a warp interwoven with a weft, the threads of said warp being comprised substantially exclusively of a staple fiber, said staple fiber being polyester, and the threads of said weft being comprised substantially exclusively of a matrix fiber, said matrix fiber being about 50% vinyl and about 50% vinyon, and constituting between 50–75% by volume of the total content of such fabric, said fabric being constructed and arranged to pass standard DOC FF5-74 after 50 launderings.

4,365,656
IRONLESS ROTOR WINDING FOR ELECTRIC MOTOR, METHOD AND MACHINE FOR MAKING THE SAME

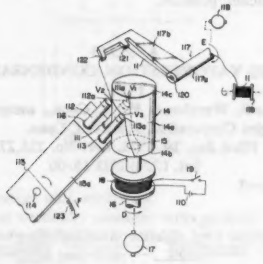
Yuji Takahashi, 609-3 Horinishi, Hatano-shi, Kanagawa-ken, Japan

Division of Ser. No. 41,182, May 21, 1979, Pat. No. 4,320,319. This application Jul. 18, 1980, Ser. No. 170,147

Claims priority, application Japan, May 31, 1978, 53-64375; Jun. 6, 1978, 53-67312

Int. Cl.³ H02K *15/04*

U.S. Cl. 140—92.1 10 Claims



1. A method for making a cup-shaped ironless motor winding for insertion in an electric motor, comprising winding a plurality of winding turns over a mandrel having a cylindrical periphery and at least one end portion such that each turn of said winding includes a first winding portion wound across said one end portion; a second winding portion wound onto the cylindrical periphery of said mandrel at an angle of inclination with respect to the axis of revolution of said cylindrical mandrel and a third winding portion wound circumferentially onto the mandrel along the peripheral edge of the cup-shaped winding whereby the overall rigidity of said ironless rotor winding is increased.

4. A machine for making an ironless cup-shaped rotor winding for an electric motor, comprising: a mandrel having a cylindrical rotor forming periphery and at least one adjacent end face, means for forming at least one retractable projection upon the surface of said mandrel, means for repetitively winding a wire across said adjacent end face onto the cylindrical periphery at an inclined angle with respect to the axis of revolution of said mandrel and against said at least one retractable projection, and means for selectively retracting said at least one retractable projection and indexing said mandrel.

4,365,657
MACHINE FOR THE MANUFACTURE OF REINFORCING BODIES FOR CONCRETE PIPES

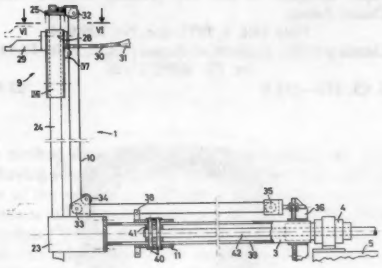
Georg Pfender, Kisslegg, Fed. Rep. of Germany, assignor to MBK Maschinenbau GmbH, Kisslegg, Fed. Rep. of Germany

Filed Oct. 23, 1980, Ser. No. 199,735

Claims priority, application Fed. Rep. of Germany, Nov. 16, 1979, 2946297

Int. Cl.³ B21F *27/10*

U.S. Cl. 140—112 3 Claims



1. A machine for the manufacture of reinforcing bodies for concrete pipes, having longitudinal bars and wires wound over and welded at the points of intersection of said bars, comprising:

a fixed main disc;

a support disc mounted coaxially and synchronized with the main disc, and displaceable in the axial direction;

guide means carried by and radially displaceable on the main disc, said guide means providing a welding rest for the longitudinal bars;

a carriage transversely displaceable relative to the axis of the discs;

a welding device disposed on the carriage to make welds successively on the longitudinal bars;

traction means engaged to the guide means;

roller means for guiding the traction means into the radial and axial directions;

axially directed hydraulic cylinder means for driving the traction means; and

transversely directed hydraulic cylinder means for driving the carriage, synchronized with the axially directed cylinder means such that the guide means and the welding device are radially synchronized.

4,365,658
WOVEN CLOTH BASKET

S. Marie Stevens, P.O. Box 95, Ephraim, Utah 84627

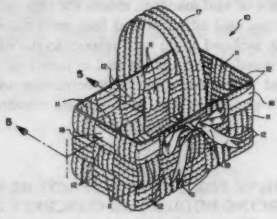
Filed Oct. 2, 1980, Ser. No. 193,127

Int. Cl.³ B65D *30/04, 37/00*

U.S. Cl. 150—48 4 Claims

1. A woven fabric basket comprising sidewalls formed of woven vertical and horizontal strips of quilted cloth wherein

each of the strips is made of two narrow, elongate pieces of cloth having batting disposed therebetween with the pieces of



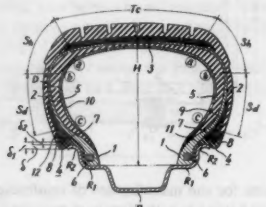
cloth being stitched together by multiple, spaced, stitched seams running longitudinal of the pieces of cloth.

4,365,659

PNEUMATIC SAFETY TIRE

Akira Yoshida, Itami, and Masanori Kan, Amagasaki, both of Japan, assignors to The Toyo Rubber Industry Co., Ltd., Osaka, Japan

Filed Oct. 3, 1977, Ser. No. 839,014
Claims priority, application Japan, Oct. 2, 1976, 51-118732
Int. Cl.³ B60C *17/00*
U.S. Cl. 152—354 R **12 Claims**



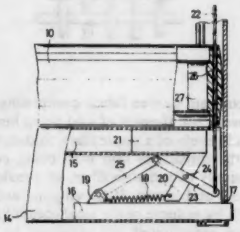
1. In a pneumatic tire and wheel rim assembly, said tire comprising a pair of axially spaced-apart annular beads, a side wall extending radially outwardly from each of the beads, a shoulder at the radially outer end of each of the side walls and an annular tread crown extending between said shoulders, said wheel rim having an axially extending rim base, bead seats at the opposite ends of said rim base and terminating in radially outwardly directed rim flanges, the improvement which comprises: said tire has at least one annular projection of high rigidity in the circumferential direction, said projection being located on the axially outer side of said wheel rim outside of its associated bead and adjacent to its associated rim flange, said annular projection being made of rubber and being reinforced with an annular rigid reinforcement, said projection being of smaller diameter than and projecting radially inwardly of its associated rim flange a distance such that the largest radius of its associated rim flange is from 2 to 7 mm larger than the smallest radius of said projection under conditions of atmospheric internal pressure and no load on the tire; two elastic side reinforcement layers which respectively extend along and cover the interiors of the side walls and the corresponding shoulders of the tire, said elastic side reinforcement layers being made of a rubber whose surface temperature increase is in the range of 3° to 12° C., measured by ASTM-D632-58A using a Goodrich flexometer, said elastic side reinforcement layers being shaped so that they are thickest at said shoulders of said tire and their thicknesses gradually decrease toward said tread crown and toward their associated side wall; a protective rubber layer covering the interior surface of said tire including said side reinforcement layers and being vulcanized together with said side reinforcement layers, said protective rubber layer containing more than 30% of halobutyl rubber, so that on deflation of the tire during running thereof the beads of the tire do not separate from the rim, the cornering force remains high and the side walls of the tire do not undergo excessive heat build-up and are resistant to failure due to wrinkling, cracking or abrasion.

4,365,660

ROLLER BLIND

Johann-Georg Henkenjohann, Verl, Fed. Rep. of Germany, assignor to Johann Henkenjohann, Fed. Rep. of Germany

Filed May 13, 1981, Ser. No. 263,141
Claims priority, application Fed. Rep. of Germany, May 22, 1980, 3019566
Int. Cl.³ E06B *9/08*
U.S. Cl. 160—133 **8 Claims**



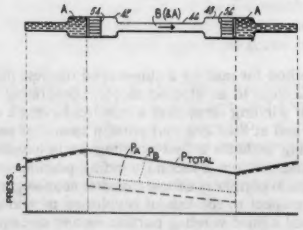
1. A roller blind comprising: a plurality of hollow laminated strips, which strips are attached to one another and are guided at their lateral ends in two guide rails; end pieces inserted into at least one of the ends of each of the hollow, laminated strips so as to close off the end, each end piece defining a vertical bore therethrough such that the bores are aligned when the strips are attached to one another; a locking mechanism located in an end bar acting as the lowermost laminated strip having a bolt movable between a retracted, unlocked position and an extended, locked position wherein it engages an opening in one of the guide rails; spring means biasing the bolt into its extended, locked position; and a cord extending through the end piece bores which causes the bolt to move into its retracted, unlocked position.

4,365,661

ENHANCED VAPORIZATION/CONDENSATION HEAT PIPE

Robert Tripodi, Warehouse Point, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Jan. 19, 1981, Ser. No. 226,274
Int. Cl.³ F28D *15/00*
U.S. Cl. 165—1 **19 Claims**



1. An enhanced vaporization/condensation type of heat pipe comprising a closed-circuit fluid conduit having a heat source position at a first temperature in heat exchange relation with a

heat source and a heat sink position in heat exchange relation with a heat sink, said heat sink position being at a second temperature lower than said first temperature, first and second catalyst means within the conduit substantially at the heat source and the heat sink positions respectively, and a transport fluid within the conduit, said transport fluid being selected to enter said heat source position as a liquid and to be vaporized thereat, said vaporized transport fluid being reversibly, endothermically at least partially reacted catalytically to thereby reduce the vapor pressure of said transport fluid and enhance said vaporization of said fluid and to provide at least some reaction product, the thermal energy absorbed from the heat source by vaporization of said transport fluid being at least fifty percent of the total thermal energy removed from the heat source by the transport fluid, said reaction product and any remaining vaporized transport fluid being transported to said heat sink position, said reaction product being exothermically reacted catalytically at said heat sink position to reform transport fluid, any said vaporized transport fluid being condensed at the heat sink position thereby to release thermal energy to the sink and return the transport fluid to the liquid form, and the liquid transport fluid being returned to the heat source position for completing and repeating the cycle.

4,365,662
METHOD FOR CHARGING AND DISCHARGING A LATENT-HEAT STORAGE MEDIUM AND HEAT STORAGE

Heinz Reusch, Höxter, and Robert Kreikenbohm, Stadtoldendorf, both of Fed. Rep. of Germany, assignors to Stiebel Eltron GmbH & Co. KG, Holzminden, Fed. Rep. of Germany

Division of Ser. No. 949,026, Oct. 6, 1978. This application Jun. 25, 1981, Ser. No. 278,006

Claims priority, application Fed. Rep. of Germany, Oct. 10, 1977, 2745492; Jul. 17, 1978, 2831325

Int. Cl.³ F28D *17/00*

U.S. Cl. 165—10 **5 Claims**

1. A heat storage unit, including:

a cyclindrical vertically arranged storage tank;

a mass of normally solid, liquefiable heat storage material contained within said tank;

a mass of heat carrier liquid immiscible with said heat storage material and at least partially filling said tank;

an exit conduit extending into said tank and terminating centrally thereof within said mass of heat carrier liquid;

an inlet conduit extending into said tank and terminating within said tank in plural discharge openings spaced vertically of said tank and spaced radially from the vertical axis thereof, at least one of said openings being located within said mass of heat carrier liquid and spaced from said heat storage material when said material is in a solidified condition;

each of said openings being oriented in a direction substantially perpendicular to a radius of the tank and in the same general direction as each other for a flow of heat carrier liquid therethrough to induce a rotary circulatory motion within the contents of said tank.

4,365,663
METHOD AND SYSTEM FOR CONTROLLING A VEHICLE-MOUNTED AIR CONDITIONER

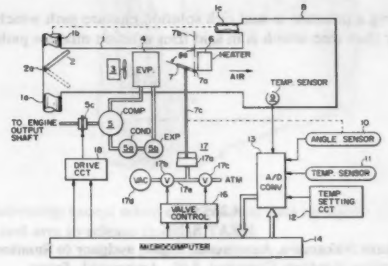
Yozo Inoue, Chiryu; Kiyoshi Hara, and Yoji Ito, both of Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Jan. 7, 1981, Ser. No. 223,083

Claims priority, application Japan, Jan. 16, 1980, 55-3813

Int. Cl.³ F25B *29/00*; B60H *3/00*

U.S. Cl. 165—12 **6 Claims**



1. A method for controlling a vehicle-mounted air conditioner having an evaporator for cooling air directed toward the interior of the vehicle, a compressor controllably coupled in the presence of a control signal to a prime mover of the vehicle for supplying pressurized refrigerant to said evaporator to increase its cooling capacity or decoupled in the absence of said control signal from said prime mover to decrease the cooling capacity of said evaporator, a heating unit located downstream of said evaporator and partially occupying the passage of said cooled air for directing warm air toward said vehicle interior, and means for adjusting the amount of said cooled air presented to said heating unit relative to the amount of said cooled air directed to said vehicle interior, comprising the steps of:

(a) measuring the amount of time elapsed from the instant when said compressor is changed from a first condition in which the compressor is coupled to said prime mover to a second condition in which the compressor is decoupled from said prime mover, or when said compressor is changed from said second condition to said first condition; and

(b) controlling said adjusting means to gradually vary the amount of said cooled air presented to said heating unit as a function of time when said measured amount of time reaches a predetermined value.

4,365,664
OSMOTICALLY PUMPED HEAT PIPE WITH PASSIVE MIXING

Algerd Basiulis, Redondo Beach, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

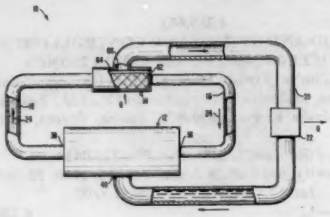
Filed Oct. 20, 1980, Ser. No. 198,748

Int. Cl.³ F28D *15/00*

U.S. Cl. 165—40 **15 Claims**

1. An osmotically pumped heat pipe comprising solution and solvent reservoirs, an osmotic pump with solvent-permeable membrane material separating said reservoirs, an evaporator, a solvent vapor-liquid path coupled between said evaporator and said solvent reservoir, a condenser in said solvent vapor-liquid path, separate solution paths respectively carrying lean and rich mixtures of said solution and respectively coupled

between said solution reservoir and said evaporator, and means associated with at least one of said solution paths capable of



inducing a pressure in said rich solution mixture path which is higher than that which is in said lean solution mixture path.

4,365,665

HEAT SINK

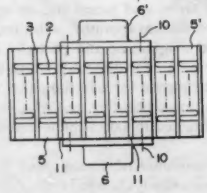
Masakazu Nakamura, Amagasaki, Japan, assignor to Sumitomo Precision Products Company, Ltd., Amagasaki, Japan

Division of Ser. No. 94,096, Nov. 4, 1979, Pat. No. 4,270,604. This application Mar. 20, 1981, Ser. No. 245,912

Claims priority, application Japan, Nov. 17, 1978, 53/159302

Int. Cl.³ F28F *13/00*

U.S. Cl. 165—80 B **9 Claims**



1. An improved heat sink comprising:

a plurality of continuous corrugated fins which each have opposed end edges;

a plurality of separator sheets having end edges at opposite sides thereof, the end edges of said sheets being spaced further apart than said end edges of said fins,

said fins and said sheets being stacked in alternating relationship with said end edges of all said corrugated fins and all of said sheets positioned on opposite sides of the stack, the end edges of each of said corrugated fins being disposed inwardly of the stack relative to the end edges of all of said sheets;

a plurality of side bars, each side bar having opposed outer and inner edges, there being a respective side bar for each said end edge of each said corrugated fin, the inner edge of each side bar being disposed in contacting relationship relative to the corresponding corrugated fin end edge,

the outer edges of said side bars and the end edges of said sheets forming a flat, smooth surface on at least one of the opposite sides of the stack, said flat, smooth surface being adapted for having a heat source mounted thereon; and

brazing means interconnecting said corrugated fins, separator sheets and side bars together for efficient heat conductivity.

4,365,666

HEAT EXCHANGER

Rolf Seifert, Laakbaum 16, 5608 Radevormwald, Fed. Rep. of Germany

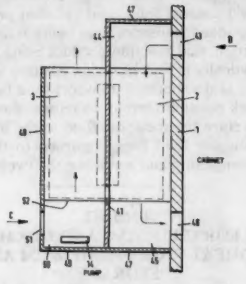
Continuation-in-part of Ser. No. 789,834, Apr. 22, 1977, Pat. No. 4,183,400. This application Oct. 2, 1979, Ser. No. 81,119

Claims priority, application Fed. Rep. of Germany, May 12, 1979, 2919267

The portion of the term of this patent subsequent to Jan. 15, 1997, has been disclaimed.

Int. Cl.³ F28D *15/00*

U.S. Cl. 165—104.29 **7 Claims**



1. In a heat exchanger for removing heat from a cabinet comprising: a heat-receiving element for receiving heat from outside of itself adapted to be positioned in a sealed air-exchange relationship with the inside of the cabinet and having an inner hollow space, a inlet means, outlet means, and heat exchange surfaces; heat-dissipating element adapted to be positioned outside the cabinet and having an inner hollow space, inlet means, outlet means, and heat exchange surfaces; means connecting the corresponding inlet means and outlet means of the heat-receiving element and the heat-dissipating element to form a closed cycle in which a liquid circulates; and means for circulating the liquid in the closed cycle between the heat-receiving element and the heat-dissipating element; the improvement wherein the circulating means has no mechanical parts which directly contact the liquid and comprises: an air/-liquid siphon consisting of one of the elements; an air moving pump; and an air supply means connecting said air moving pump to said air/liquid siphon; at least said heat-dissipating element further comprises a vertical uptake pipe integrally formed with said hollow space having said inlet means near its bottom and an overflow at its upper area which terminates into the hollow space, said outlet means of the heat-receiving element being connected to said inlet means of the heat-dissipating element, said outlet means of the heat-dissipating element extends from the lower area of the hollow space of the heat-dissipating element for removing the liquid from the same and supplying it to the heat-receiving element, and said heat-dissipating and heat-receiving elements are both constructed as an air-to-air heat exchanger.

4,365,667

HEAT EXCHANGER

Toshio Hatada; Takao Senshu; Akira Arai; Fumio Harada, all of Shimizu; Atsushi Matsuzaki, Tokyo; Hajime Futawatari, Shimizu; Yutaka Imaizumi, Yaizu, and Sumiyoshi Takeda, Shimizu, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 5, 1980, Ser. No. 118,723

Claims priority, application Japan, Feb. 7, 1979, 54/12263

Int. Cl.³ F28F *1/22*

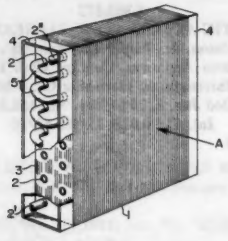
U.S. Cl. 165—152 **8 Claims**

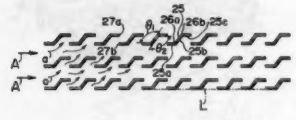
1. A cross finned tube heat exchanger comprising:

a multiplicity of fin plates of a suitable area arranged in substantially parallel, closely spaced relation; and

a plurality of heat transfer tubes passing through aligned openings in said fin plates and kept in intimate contact with said fin plates to allow a heat transfer medium flowing through said heat transfer tubes to exchange heat with another heat transfer medium flowing across the surfaces of said fin plates; wherein the improvement comprises:

a multiplicity of stepped louvers formed on a wall of each fin plate between the adjacent heat transfer tubes of the same row, said stepped louvers having, in a direction substantially at right angles to a direction of flow of the heat





transfer medium across the surfaces of the fin plates, thin strips of substantially similar width, said thin strips being formed from the plane of each of said fin plates into stepped louvers generally at right angles to the direction of flow with said another heat transfer medium, said stepped louvers having at least two walls disposed substantially parallel to one another and at least one tilting rise wall connecting said at least two walls, said strips connected at their ends to each of said plates said stepped louvers each having a rear edge varying in vertical position from a front edge of the next following stepped louver in a given row.

4,365,668

SIDE WALL CLAMP FOR DOWNHOLE TOOLS

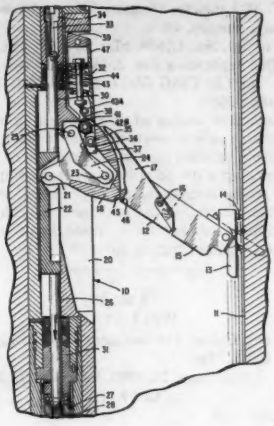
Gary R. Bright, Tulsa, Okla., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Mar. 11, 1981, Ser. No. 242,664

Int. Cl.³ E21B *23/00*

U.S. Cl. 166—214 **4 Claims**

4. In a downhole tool, a side wall clamping apparatus comprising an arm having means at one end for engaging the opposite side of the bore hole from said tool, a rotator element supporting the other end of said arm, actuator means carried by said tool and connected to said rotator whereby movement of said actuator means causes movement of said rotator and the arm carried thereby, said arm and said rotator each having normally abutting surfaces which together constitute a sear holding said arm in extended position with respect to said rotator, and means for maintaining said surfaces in abutting



relationship except when said tool is moved upwardly relative to said arm to release the sear.

4,365,669

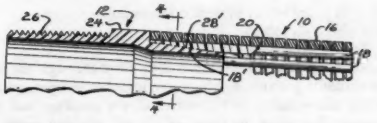
NON-SOLVENT BONDED PLASTIC WELL SCREEN ASSEMBLY

Walter R. Wagner, Minneapolis, and Henry E. Benson, Long Lake, both of Minn., assignors to UOP Inc., Des Plaines, Ill.

Filed Jan. 29, 1981, Ser. No. 229,391

Int. Cl.³ B29C *27/08;* **E21B** *43/08;* **F16L** *47/02*

U.S. Cl. 166—231 **5 Claims**



1. A non-solvent bonded assembly of a rigid thermoplastic well screen formed of helical wire wraps bonded to a series of circumferentially spaced longitudinal rods and at least one end fitting characterized in that the end fitting and well screen have substantially the same outer diameter, while the fitting has a reduced diameter inner sleeve portion which is telescopically received within one end of the well screen and intimately fused thereto, the plane of fusion between said sleeve portion and said well screen being generally conically tapered along the major portion of the region of telescopic overlap, said sleeve portion having a maximum outer diameter which is greater than the minimum inner diameter of the well screen, said assembly having a fused mixture of the plastic of the sleeve portion and the plastic of the longitudinal rods in the circumferential locations which are between the rods and radially outward of the line of fusion.

4,365,670
METHODS OF FORMING ISOCYANATE POLYMERS FOR EARTH-SEALING OPERATIONS

Homer C. McLaughlin, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

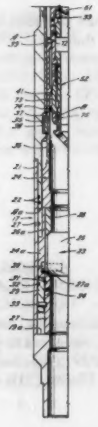
Division of Ser. No. 17,639, Mar. 5, 1979, Pat. No. 4,264,486.
This application Jun. 2, 1980, Ser. No. 155,714
Int. Cl.³ C08G *18/14, 18/22;* E21B *31/13*
U.S. Cl. 166—295 4 Claims

1. A method of sealing an area comprising mixing and placing in said area an isocyanate polymer forming mixture having a controllable gelation time in the presence of water said mixture comprising a di- or polyisocyanate compound, an alcoholic or acidic compound and a catalyst, tributyl titanate, wherein the catalyst, in the presence of water, does not promote additional foaming nor decrease the gelation time of said isocyanate polymer forming mixture.

4,365,671
WELL SYSTEM

Olen R. Long, Celina, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Nov. 28, 1980, Ser. No. 211,270
Int. Cl.³ E21B *34/14*
U.S. Cl. 166—318 7 Claims

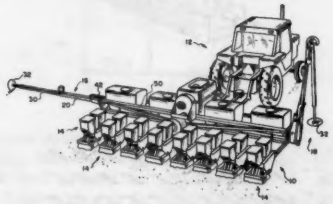


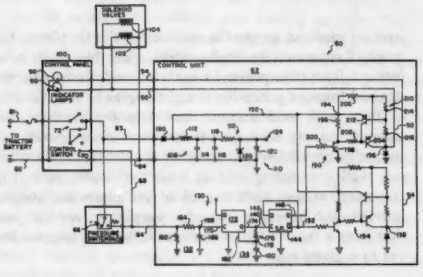
1. A well completion system comprising:
a foot valve including;
a body having a bore therethrough,
a valve member and seat controlling flow through the bore, an actuator positioning the valve member in open position when the actuator is moved to down position and positioning the valve member in closed position when the actuator is in up position, and upwardly and downwardly facing rigid shoulders on said actuator;
a standing valve in said foot valve including; a body positioned in the bore of the foot valve,
a valve member and seat permitting upward flow through the body and preventing downward flow through the body, seal means on the exterior of the body sealing between the standing valve and the foot valve body,
downwardly facing no-go shoulder means on the standing valve body engageable with the upwardly facing shoulder on the foot valve actuator to move the foot valve to open position as the standing valve is landed in the foot valve,
upwardly facing means on the standing valve body engageable with said downwardly facing shoulder on the foot valve actuator for moving the foot valve to closed position as the standing valve is withdrawn from the foot valve,
said upwardly facing means provided by lugs movable between retracted and extended position as the standing valve is inserted into the foot valve bore to permit the lugs to move past the downwardly facing shoulder on the actuator, means holding said lugs in extended position engaging said downwardly facing shoulder during upward movement of the standing valve and foot valve until the foot valve is moved to closed position, and
releasing means releasing the lugs to move to a retracted position upon continued upward movement of the standing valve to withdraw the standing valve from the foot valve.

4,365,672
AUTOMATIC ALTERNATING MARKER SYSTEM

Edward L. Robinson, Jr., Naperville; Randolph G. Fardal, Chicago, and David Anderson, Country Club Hills, all of Ill., assignors to International Harvester Co., Chicago, Ill.

Filed Jun. 5, 1980, Ser. No. 156,537
Int. Cl.³ A01B *25/00, 63/10*
U.S. Cl. 172—2 12 Claims





1. An agricultural planter assembly which has a plurality of planter units, which is adapted to be mechanically and hydraulically coupled to a tractor, and which has hydraulically actuated, first and second, extendable markers, each mounted on one side of the planter assembly, for marking, respectively, the track that a tractor wheel should follow on a return planting sweep of the planter assembly for planting properly spaced adjacent rows, said assembly having electrical control circuit means for enabling extension of the first marker and retraction of the second marker upon the raising of the planter units and the turning of the tractor 180°, and enabling extension of the second marker and retraction of the first marker upon the next raising of the planter units and the next turning of the tractor 180°, said electrical control circuit means including operating means therefor for sensing the raising of the planter units, a toggle bistable multivibrator having an input coupled to the output of said sensing means, and logic-output-powered hydraulic valve means, which are in circuit with the sensing means and electrical control circuit means, associated with each of the markers for controlling each one by extending and retracting that marker automatically in response to raising of

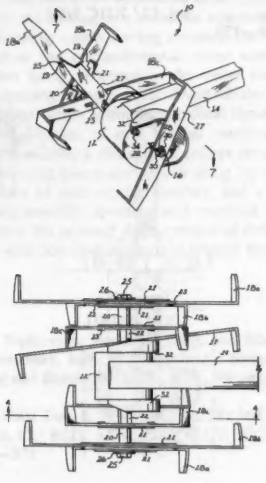
the planter unit, said bistable multivibrator having first and second outputs, said first output being coupled for applying power when at logic one to the valve means associated with the first marker for extending the latter and said second output being coupled for withholding power when at logic zero to the valve means associated with the second marker for retracting the latter, and vice versa, said second output being at logic zero when said first output is at logic one and vice versa whereby only a certain marker extends on alternate raisings of the planter units and only the other marker has extension on each remaining one of the raisings of the planter units.

4,365,673

TILLER HEAD WITH SHIFTABLE BLADES

Arnold T. Faulkner, R.R. #2, Box 443, Berrien Springs, Mich. 49103

Filed Sep. 10, 1981, Ser. No. 300,892
Int. Cl.³ A01B *33/02, 33/14*
U.S. Cl. 172—95 **4 Claims**



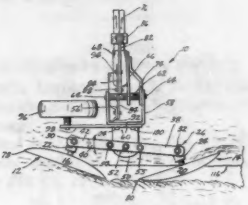
1. In a tiller head including a housing, a rotatable shaft journalled in said housing, a plurality of blades mounted on said shaft and rotating with the shaft, the improvement comprising means mounting one of said blades on said shaft for oscillating movement wherein the ends of the blade shift laterally relative to the shaft, cam means for urging said one blade into said oscillatory movement during shaft rotation, said mounting means including a sleeve fitted over said shaft in a rotative relationship with the shaft, said sleeve having opposite drive tabs extending radially from said shaft, said one blade having a central opening therein, said opening accommodating said shaft and said sleeve and having slots in its periphery receiving said sleeve drive tabs to lock said one blade for rotation with the shaft, said sleeve including retaining means for preventing longitudinal movement of said blade along said sleeve at said blade opening while permitting said oscillatory movement of said blade ends.

4,365,674

TANDEM DISC ROW MARKER

Henry K. Orthman, Lexington, Nebr., assignor to Orthman Manufacturing Co., Inc., Lexington, Nebr.

Filed Feb. 2, 1981, Ser. No. 230,389
Int. Cl.³ A01B *69/02, 17/00*
U.S. Cl. 172—126 **11 Claims**



1. A row marker comprising:

earth working means, including two cutting discs, each disc including a convex surface, a concave surface and a cutting edge having a point of deepest contact with the earth, wherein said discs are disposed in tandem with said cutting edges set to overlap at least to the extent that the cutting line of the trailing deepest point lies substantially in the vertical plane of the cutting line of the lead deepest point,

extension means operatively connected to said earth working means; and

motive means operatively connected to said extension means, whereby a marker furrow is formed at a selected location with approximately even sides which slope continuously downward to a single, substantially central bottom area,

disc offsetting means secured to said discs whereby the trailing disc will cut the soil to a deeper point than the lead disc,

said disc offsetting means including a pair of horizontally disposed bars lying generally along the direction of the furrow to be cut, each bar having a forward and a rear end, with an upper bar overlying a lower bar in parallel, spaced relation, and wherein the forward end of said upper bar is offset up and the rear end of said lower bar is offset down,

a forward stub shaft secured between the forward ends of said bars and attached to the center of said lead disc, and

a rear stub shaft secured between the rear ends of said bars and attached to the center of the trailing disc.

4,365,675

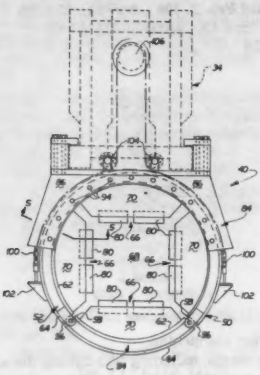
PILE DRIVING ASSEMBLY

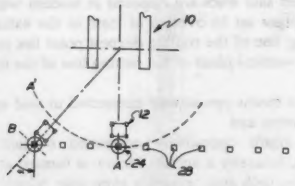
Alan G. MacKinnon, Newcomerstown, Ohio, assignor to Foundation Equipment Company, Newcomerstown, Ohio

Filed Sep. 24, 1979, Ser. No. 78,456
Int. Cl.³ B25D *17/28;* **E21B** *1/00*
U.S. Cl. 173—105 **7 Claims**

1. A pile driver assembly for a noncircular pile, comprising: a lead, a hammer assembly supported for longitudinal movement along said lead, a helmet at the lower terminus of said hammer assembly having pile mating components with a noncircular internal configuration for receiving the upper end of the pile, a pile guide supported for longitudinal movement along said lead and having pile mating components with a noncircular internal configuration for receiving the pile intermediately the length thereof, the pile mating components of each of said helmet and pile guide being rotatable in response

to rotation of the pile, and a pile rotator supported proximate the lower end of said lead having a noncircular internal configuration for receiving the pile; said pile rotator comprising means for centering and rotating the pile.



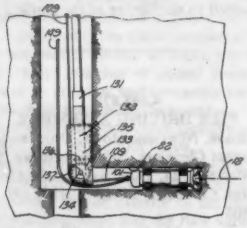


4,365,676

METHOD AND APPARATUS FOR DRILLING LATERALLY FROM A WELL BORE

George I. Boyadjieff, Anaheim, and Andrew B. Campbell, San Marino, both of Calif., assignors to Varco International, Inc., Orange, Calif.

Filed Aug. 25, 1980, Ser. No. 180,695
Int. Cl.³ E21B 4/18, 7/04; E21C 1/10, 5/11
U.S. Cl. 175—61 **38 Claims**



8. The method that comprises:

lowering into a main well bore a drilling unit and a carrier holding said unit, with said drilling unit and carrier extending generally longitudinally of the main well bore as they are lowered;

turning both the carrier and the drilling unit held thereby within the well from said generally longitudinally extending position to a position of extension more transversely of the main well bore;

advancing said drilling unit from said carrier to drill a hole extending laterally from the main well bore; and

actuating the drilling unit to grip the wall of said hole and apply reactive forces from the drilling unit thereto as the hole is drilled.

13. A drilling unit comprising:

a drilling element;

first drilling means for engaging a bore wall to transmit reactive forces thereto;

a piston and cylinder structure operable alternately to first advance said drilling element relative to said gripping means to drill a portion of a hole and then advance said gripping means in preparation for a next drilling step;

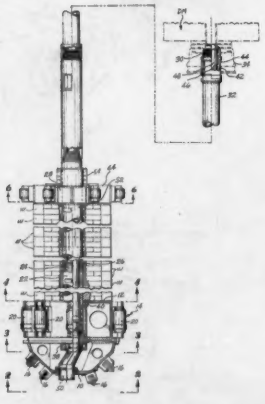
said piston and cylinder structure containing different cylinder chambers for exerting force to advance the drilling element and gripping means respectively, and having more cylinder chambers for advancing the drilling element than for advancing the gripping means.

4,365,677

EARTH BORING APPARATUS

Lloyd J. Owens, Seattle, Wash., assignor to The Robbins Company, Kent, Wash.

Division of Ser. No. 31,856, Apr. 20, 1979, Pat. No. 4,270,618.
This application Mar. 23, 1981, Ser. No. 246,375
The portion of the term of this patent subsequent to Jun. 2, 1998, has been disclaimed.
Int. Cl.³ E21C 9/00
U.S. Cl. 175—173 **8 Claims**



1. An apparatus for boring a bore hole and reaming it back to a larger diameter comprising:

a rotatable powered drive stem having a diameter substantially less than the diameter of the bore hole;

a stabilizer frame detachably connected to the lower end of said drive stem, said stabilizer frame having peripheral portions extending outwardly a substantial distance beyond said drive stem to contact against the bore wall to center said stabilizer frame within the bore hole;

a bore formed cutterhead and a bore enlarging reamer; and

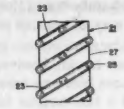
said stabilizer frame further including mounting means for selectively detachably connecting said bore forming cutterhead and said bore enlarging reamer to the side of said stabilizer frame opposite said drive stem, said mounting means having attachment points associated with corresponding points on said cutterhead and said reamer for attaching said cutterhead and reamer to said stabilizer frame, said mounting means attachment points located at substantial distances radially outwardly of said drive stem.

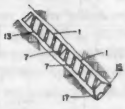
4,365,678

TUBULAR DRILL STRING MEMBER WITH CONTOURED CIRCUMFERENTIAL SURFACE

John L. Fitch, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 28, 1980, Ser. No. 210,914
Int. Cl.³ E21B *17/16, 17/22*
U.S. Cl. 175—323 **6 Claims**





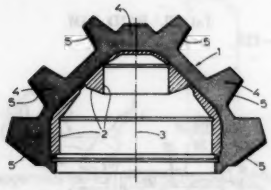
1. An elongate tubular member, such as a section of drill pipe or drill collar, adapted to be connected at its opposite ends in a drill string for the drilling of a borehole, comprising continuous contour-forming means having recessed surface portions depending below the circumferential outer surface of said tubular member being arranged in the outer circumference thereof and extending along the axis of said tubular member for producing a downwardly acting longitudinal thrust responsive to rotational movement of said tubular member along the surface of the borehole; a plurality of rollers arranged within said contour-forming means and spaced along the circumferential outer surface of said tubular member; and a low-friction surface coating material covering said recessed surface portions to facilitate the upward displacement of drilling mud or fluid through said borehole about said tubular member.

4,365,679

DRILL BIT

Hans B. van Nederveen, Bosch en Duin, and Martin B. Verburgh, Amersfoort, both of Netherlands, assignors to SKF Engineering and Research Centre, B.V., Nieuwegein, Netherlands

Filed Dec. 2, 1980, Ser. No. 212,068
Int. Cl.³ B21K *5/02*; E21B *10/22, 10/50*
U.S. Cl. 175—371 **4 Claims**



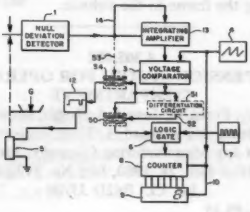
1. A drill bit with cutting teeth for drilling in rock comprising:
- a core member having raceways for rolling elements for rotation of the drill bit,
- a supporting layer exteriorly shaped to define cutting teeth and formed of highly compacted sintered powder material of substantially 90% density, isostatically bonded to said core member,
- a wear resistant layer applied by thermal spraying and covering only the portions of the cutting teeth which upon drilling directly contact the rock,
- said wear resistant layer and said supporting layer being isostatically compacted hot which combined are of substantially 99% density,
- said layers having a solid bond therebetween providing a drill bit of superior mechanical properties including high resistance to wear and chipping.

4,365,680

FORCE MEASURING DEVICE

Dietrich Gottstein, Lechnerstrasse 8, D-8026 Ebenhausen, and Christian Nitschke, Savoyenstr. 4, 8 München 19, both of Fed. Rep. of Germany

Filed Jun. 19, 1980, Ser. No. 160,969
Claims priority, application Fed. Rep. of Germany, Jun. 25, 1979, 2925503; Jun. 25, 1979, 2925504
Int. Cl.³ G01G *7/00, 3/14*
U.S. Cl. 177—212 **28 Claims**



1. A device for measuring forces comprising:
- a coil that moves in a magnetic field in response to the forces being measured;
- null deviation detector means, coupled to said coil, for producing position signals corresponding to the difference in position of said coil from a null position;
- integrating control means, coupled to said null deviation detector means, having a variable integration constant for integrating said position signals to produce a compensation pulse;
- means for varying the integration constant dependent upon the position of said coil, such that a large deviation of said coil from said null position would cause a large integration constant and a slight deviation of said coil from the null position would cause a small integration constant;
- means, coupled to said integrating control means, for restoring said coil to said null position in response to said compensation pulse;
- conversion means, coupled to said integrating control means; for converting said compensation pulse into a display signal indicating the numerical value of the forces being measured; and
- a display unit for displaying the numerical value of the forces being measured in response to said display signal.

4,365,681

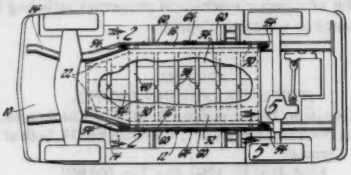
BATTERY SUPPORT STRUCTURE

Harmahendar Singh, Sterling Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 22, 1980, Ser. No. 218,936
Int. Cl.³ B60K *1/04*
U.S. Cl. 180—68.5 **3 Claims**

1. A structure for supporting a plurality of batteries in rows beneath a vehicle, comprising,
- a structural frame located beneath the vehicle and having a pair of side rails running longitudinally of the vehicle,
- a plurality of pairs of aligned I-type beams running generally transversely of the side rails, each beam of each aligned

pair being cantilevered from a respective side rail and running approximately to the center of support structure, each cantilevered beam having a lower and an upper flange, the upper flanges of each parallel pair of cantilevered beams being spaced apart a distance slightly greater than the width of the row of batteries supported therebetween



with the lower flanges thereof being spaced apart a distance less than such width so as to underlie and support the lower edges of a row of batteries supported thereon, the upper flanges of the cantilevered beams being located between adjacent rows of batteries and means releasably mounting the frame to the vehicle.

4,365,682

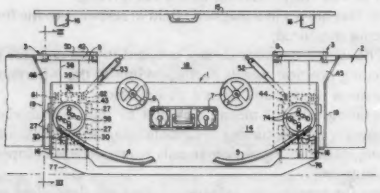
SUSPENSION SYSTEM FOR OPERATOR COMPARTMENT

G. Robert Frey, Franklin; Joseph A. Rogus, Snow Shoe; Paul R. Johnson, Reno, and Richard A. King, Emlenton, all of Pa., assignors to Joy Manufacturing Company, Pittsburgh, Pa.

Filed Dec. 24, 1980, Ser. No. 219,648

Int. Cl.³ B62D *33/06*

U.S. Cl. 180—89.13 **10 Claims**



1. A suspension system for the operator compartment of a mine vehicle having a frame, said system comprising track members arranged in a substantially vertical plane and rigidly secured to the frame of the vehicle, first means for supporting the operator compartment on said track members, said first means permitting vertical movement of each end of said operator compartment in a linear path along said track members, second means for limiting such vertical movement and third means cooperating with said first means to permit vertical movement of one end of said compartment with respect to the other in an arcuate path.

4,365,683

POWER ASSISTED VEHICLE STEERING SYSTEM

Frederick J. Adams, Clevedon, England, assignor to Cam Gears Limited, Hitchin, England

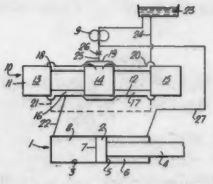
Filed May 12, 1981, Ser. No. 262,954

Claims priority, application United Kingdom, May 14, 1980, 8015929

Int. Cl.³ B62D *5/06*

U.S. Cl. 180—132 **3 Claims**

1. A power assisted vehicle steering system comprising a pressure biased piston and cylinder device actuation of which effects in the power assistance, the piston of said device having axially opposed faces with different effective pressurised areas of which the face with the smaller effective area communicates with a first piston chamber and the face with the larger effective area communicates with a second piston chamber; pump means having an output from which fluid under pressure is derived for actuating the piston and cylinder device; valve means which is adjustable in response to a steering manoeuvre to control flow of fluid under pressure from the pump output to the piston and cylinder device for providing power assistance consistent with said manoeuvre, said valve means deriving fluid under pressure from the pump output by way of restrictor means and having a neutral condition in which the first and second piston chambers and the pump output communicate with exhaust by way of control port means in the valve



means, said second piston chamber communicates with the pump output by way of said restrictor means and said control port means, and said first piston chamber communicates with the pump output upstream of said restrictor means and said control port means, and wherein the restrictor means is arranged so that with the valve means in its neutral condition the fluid pressure in the second piston chamber having suffered a pressure decrease effected by the restrictor means and the control port means provides an axial force on the larger piston face which substantially balances an opposing axial force on the smaller piston face provided by the fluid pressure in the first piston chamber.

4,365,684

POWER ASSISTED GEAR ASSEMBLY

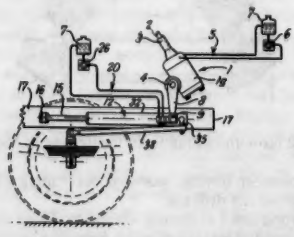
Robert Turner, Rayleigh, England, assignor to Cam Gears Limited, Hertfordshire, England

Filed Jul. 23, 1980, Ser. No. 171,340

Claims priority, application United Kingdom, Jul. 23, 1979, 7925593

Int. Cl.³ B62D *5/08*

U.S. Cl. 180—133 **10 Claims**



1. A power assisted steering gear assembly comprising, input means,

steering linkage means displaceable to provide a steering output in response to a steering input applied to said input means,

a displaceable component, displacement of which in response to said steering input effects displacement of said linkage means,

a first power fluid system connected to said displaceable component to provide power assist for the displacement of said displaceable component,

a second power fluid system connected to said steering linkage means to provide power assist to said steering linkage means,

said first power fluid system comprising a fluid source and a fluid pressure operated means associated with said displaceable component and said second power fluid system comprising a fluid source and a fluid pressure operated means associated with said steering linkage and

an auxiliary valve means located in one of said first and second power fluid systems and controlling fluid flow from the power source to the fluid pressure operated means in said one of said first and second power fluid systems in response to the pressure of the fluid flow in the other of said first and second power fluid system so as to render ineffective power assist from said one of said first and second fluid power systems when said pressure in said other of said first and second power fluid systems exceeds a predetermined amount, and to provide power assist from said one of said first and second power fluid systems when said pressure in said other of said first and second power fluid systems is below a predetermined amount or ceased to exist.

4,365,685

EQUIPMENT FOR INFLUENCING THE JACKNIFING ANGLE OF ARTICULATED MOTOR VEHCILES

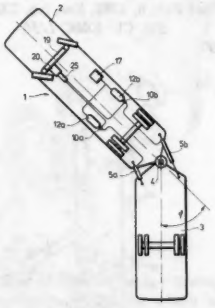
Istvan Ratsko; Jozsef Ivony; Jenö Madi, and György Karaszi, all of Budapest, Hungary, assignors to Autoipari Kutato Intezet and Ikarus Karosszeria es Jarmugyar, both of Budapest, Hungary

Filed Aug. 21, 1980, Ser. No. 180,093

Claims priority, application Hungary, Aug. 21, 1979, AU-429; Aug. 21, 1979, AU-430

Int. Cl.³ B62D *5/08, 5/10*

U.S. Cl. 180—135 **10 Claims**



1. In an apparatus for influencing the jackknifing angle of an articulated motor vehicle, when the vehicle units are in articulated coupling with each other, of the type having a hydraulic piston device with pairs of cylinders with two working spaces arranged outside the longitudinal centerline of the motor vehicle, the piston of which is connected to one vehicle unit, and the cylinder to the other vehicle unit, each working space being connected through a hydraulic valve unit to the hydraulic space of a hydropneumatic energy source, the valve unit having a parallel connected check valve and choke valve closing from the direction of the working space toward the hydropneumatic energy source, the improvement comprising a sensing element for sensing the steering angle of the front axle of the vehicle and for producing an actuating signal in response thereto and wherein the choke valve comprises an adjustable transfer cross sectional closing element connected to the sensing element and responsive to the actuating signal for changing the position of one of the choke valves to increase choking.

4,365,686

TRANSMISSION SHAFT FOR A FRONT WHEEL DRIVE VEHICLE HAVING AN AUTOMATIC GEAR BOX

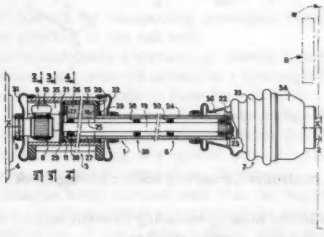
Michel A. Orain, Conflans-Ste. Honorine, France, assignor to Glaenzer Spicer, Poissy, France

Filed Dec. 5, 1979, Ser. No. 100,405

Claims priority, application France, Dec. 18, 1978, 78 35576

Int. Cl.³ B60K *17/30*

U.S. Cl. 180—256 **8 Claims**



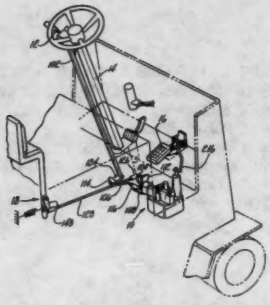
1. A structure comprising in combination transmission shaft means, a vehicle front wheel drive comprising a front wheel, brake means for said wheel and an engine-automatic gear box-differential assembly which has an output shaft, said output shaft carrying a male member of a slidable tripod-type joint, said assembly being liable to produce a drag torque on said output shaft when the engine is idling and said brake means hold the wheel stationary, a tulip element of said slidable tripod type joint, the tulip element being in the form of a tubular sleeve whose internal cross-sectional shape comprises three lobes, the lobes co-operating with respective rollers of said male member in a first part of the longitudinal length of the sleeve, the shaft means comprising a first transmission element which has a high torsional elasticity, first connecting means connecting one end of the first transmission element to rotate with said tulip member, an opposite end of the first transmission element being connected to rotate with said front wheel, a second transmission element which has a torsional elasticity lower than said high torsional elasticity and is coaxial with the first transmission element and has one end connected to rotate with said front wheel, and second connecting means connecting an opposite end of the second transmission element to said tulip member, said second connecting means allowing a limited angular rotational play between said opposite end of the second transmission element and said tulip member between two predetermined relative positions corresponding to positive values of vehicle driving torque applied to said shaft means by said output shaft, said drag torque having a value which is between said two values, said second connecting means comprising radial projections on the second transmission element which are evenly circumferentially spaced apart, are respectively of smaller angular extent than said lobes and are respectively received in said lobes in a second part of the longitudinal length of the sleeve.

4,365,687

CONTROLLER FOR ELECTRIC TRACTION MOTOR

James J. Bauer, Richland, Mich., assignor to Clark Equipment Company, Buchanan, Mich.

Filed Feb. 27, 1981, Ser. No. 239,095
Int. Cl.[3] G05G 11/00
U.S. Cl. 180—315 3 Claims



1. A controller for use in a vehicle having an electric traction motor,

a controller housing including a switch support member and an actuator support member,

said actuator support member being a unitary body defining first and second passages extending orthogonally relative to each other in said body,

an actuator spool slidably disposed in said first passage and adapted for axial movement from a neutral position to forward, reverse or park position,

detent means coacting between said spool and said unitary body for holding said spool in said forward, reverse or park position,

said switch support member being a box connected with said unitary body with said first passage extending parallel to one wall of the box and said second passage extending perpendicular to said wall,

forward, reverse and brake switches mounted in said box adjacent said wall and being adapted for selective actuation for selecting forward or reverse drive or brake actuation,

a coupling member connected with said spool and adapted for connection with a manually actuable selector for selectably moving the spool to neutral, forward, reverse or park position,

cam means on said spool for selectively actuating said forward, reverse or brake switch when said actuator spool is in said forward, reverse or park position, respectively,

an actuator plunger slidably disposed in said second passage in said body and adapted to be connected with the accelerator pedal of said vehicle,

a start switch and a speed control member mounted in said box,

said speed control member having an elongated body extending perpendicular to said wall of the box and having a control plunger extending axially of said elongated body,

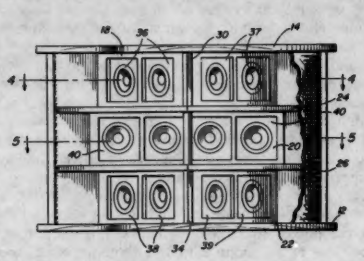
said actuator plunger coacting with said control plunger for axial movement thereof and actuation of said start switch when the accelerator pedal is depressed.

4,365,688

SPEAKER CABINET

William G. Blose, 201 Walnut St., Punxsutawney, Pa. 15767

Filed Mar. 12, 1981, Ser. No. 242,845
Int. Cl.[3] H05K 5/00
U.S. Cl. 181—145 12 Claims



1. An acoustic system comprising:

a speaker support means having a plurality of tiers forming airtight spaces containing a plurality of sound dispersing speakers positioned within said speaker support means, a topmost tier of said speakers and a bottommost tier of said speakers each utilizing speakers divergently aligned with one another;

sound chamber means associated with said airtight spaces of said plurality of sound dispersing speakers, said sound chamber means serving to modify the tonal quality of sound emitted by said plurality of speakers;

sound obstructing means including material covering means performing as a sound insulation means associated with said support means and forming sound panel means positioned between adjacent tiers of said plurality of tiers serving to selectively prevent an interference of dispersed sound between said plurality of speakers; and

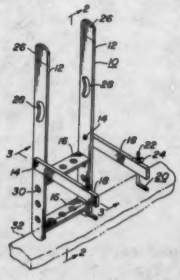
sound directing means serving to direct said dispersed sound in a desired direction.

4,365,689

TILTING MARINE LADDER

Francis Dever, 8208 Central Ave., Sea Isle City, N.J. 08243

Filed Feb. 6, 1981, Ser. No. 232,339
Int. Cl.[3] E06C 1/36
U.S. Cl. 182—97 9 Claims



1. A tiltable, portable, pivotable marine type ladder which comprises:

(a) two parallel support members having a top end and a bottom end;

(b) two pivot means, each of the pivot means disposed on each of the support members at a location approximately midway between the top and the bottom end of the support members;

(c) a plurality of horizontal stairs connecting the support members at positions between the bottom end of the support members and the pivot means;

(d) two parallel struts, each of the struts having a pivotable end and an outer end, the pivotable end of each of the struts pivotable connected to each of the pivot means;

(e) a locking means attached to the outer end of each of the struts and the locking means capable of being secured to a marine structure, said marine structure being adjacent to a body of water;

(f) a counterweight balance located above the pivot means on each of the support members, the counterweight balance being of a sufficient weight so as to be able to tilt the support members from a horizontal position to a vertical position when an initial vertical downward force is applied to the bottom ends of the support members so as to at least partially submerge the support members in the body of water, and also to automatically tilt the support member back to its horizontal position out of the water when the force is released upon activation by said water.

4,365,690

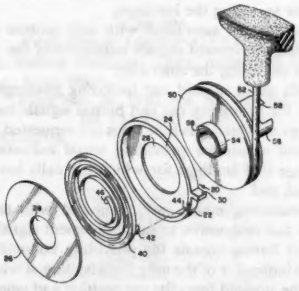
SPRING CARTRIDGE FOR SPRING OPERATED RE-WIND MECHANISM

Robert J. Zavatkay, Torrington; George W. Kurasz, Bristol, and Robert R. Devaux, Northfield, all of Conn., assignors to Barnes Group Inc., Bristol, Conn.

Division of Ser. No. 957,724, Nov. 6, 1978, Pat. No. 4,261,437. This application Sep. 30, 1980, Ser. No. 192,620

Int. Cl.³ F16F 1/12; F03G 1/00

U.S. Cl. 185—45 **1 Claim**



1. As a new article of manufacture, a spring cartridge for insertion into an open circular recess, which includes an outwardly extending radial slot, in an engine to form part of a re-wind mechanism, comprising a cylindrical casing of substantially the same diameter and depth as the recess and having a peripheral wall and sides of different appearances and having a central opening which is concentric with the peripheral wall, a backwound spiral spring within the casing with its outer convolution bearing against the peripheral wall of the casing and connected thereto, the inner end of the spring having an abutment formed thereon which is positioned within the central opening in the casing, and a tang connected to the peripheral wall and extending outwardly therefrom and having substantially the same size and shape as the radial slot of the recess.

4,365,691

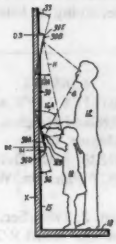
INTEGRATED ELEVATOR CAB FIXTURE

Ernest M. Bevilaqua, Wilton; Alba L. McCroskery, Weston, both of Conn., and Theodore N. Knerr, New York, N.Y., assignors to Otis Elevator Company, Farmington, Conn.

Filed Feb. 2, 1981, Ser. No. 230,974

Int. Cl.³ B66B 9/00

U.S. Cl. 187—1 R **3 Claims**



1. An elevator cab for transporting passengers including a control panel attached to one cab wall,

a first surface containing a plurality of control buttons, the first surface being oriented upward at a first angle from a cab wall from a first distance from the cab floor,

a second surface containing an information display device, the second surface being vertically above the first surface and oriented downward, at a second angle from the cab wall, from a second distance above the floor,

the first distance being selected such that the majority of buttons on the first surface are substantially at eye level for a first group of passengers standing within reaching distance of the panel,

the first angle being such that the viewing angle relative the first surface is oriented towards a second group of passengers standing within reaching distance of the panel,

the second distance being such that the display is above the eye level of both said first and second groups, and

the second angle being such that the viewing angle of the display is oriented downward towards both groups and first and second of passengers.

4,365,692

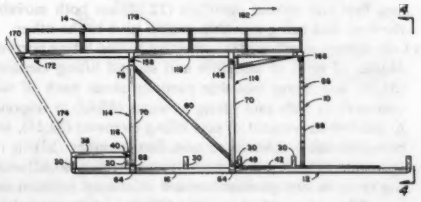
ELEVATING CATWALK

Gary W. Craig, and Jack W. Langston, both of Tulsa, Okla., assignors to Loffland Brothers Company, Tulsa, Okla.

Filed Dec. 4, 1980, Ser. No. 212,891

Int. Cl.³ B60S 13/00

U.S. Cl. 187—8.72 **6 Claims**



1. An elevating catwalk apparatus comprising base means, a catwalk assembly pivotally secured to the base means and movable between an elevated position and a lowered position with respect thereto, lifting link assembly means pivotally interposed between the base means and catwalk assembly and responsive to a longitudinal force on the catwalk assembly in one direction for elevating of the catwalk assembly and a

longitudinal force in an opposite direction for lowering of the catwalk assembly, and pivotal and slidable brace means interposed between the base means and at least one lifting link assembly means for securing the lifting link assembly in the elevated position of the catwalk assembly, and wherein the base means comprises a plurality of mutually parallel spaced beam members providing a skid for facilitating moving of the elevating catwalk apparatus from site to site, and including rail means secured to the inboard side of at least one of the beam members for slidably receiving at least one end of the brace means therein.

4,365,693

HIGH VISIBILITY LIFT APPARATUS

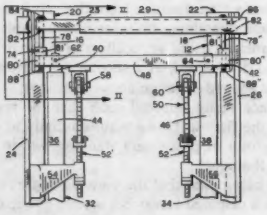
Milford D. McVeen, Highland Heights, Ohio, assignor to Towmotor Corporation, Mentor, Ohio

PCT No. PCT/US80/01326, § 371 Date Oct. 3, 1980, § 102(e) Date Oct. 3, 1980, PCT Pub. No. WO82/01181, PCT Pub. Date Apr. 15, 1982

PCT Filed Oct. 3, 1980, Ser. No. 266,011

Int. Cl.³ B66B 9/20

U.S. Cl. 187—9 E **16 Claims**



1. Apparatus (10), comprising:

a frame (28);

a first member (12) mounted on and movable relative to said frame (28);

a second member (14) mounted on and movable relative to said first member (12) and movable relative to said frame (28);

first and second lifting elements (32,34) each having a movable lifting portion (40,42) and each being connected to said frame (28), said lifting portions (40,42) each being movable between a first position at which said second member (14) is movable thereby and said first member (12) is free from being movable and a second position at which said first and second members (12,14) are both movable thereby, and being movable one relative to the other;

a load sharing member (48) connected to said lifting portions (40,42) of both of said first and second lifting elements (32,34) and being movable partially about each of said connections with said lifting portions (40,42) in response to relative movement of said lifting elements (32,34), and being movable relative to said first member (12) in response to at least one of said lifting portions (40,42) moving from its first position toward its second position and movable with said first member (12) in response to at least one of said lifting portions (40,42) being at its second position; and

means (50) for interconnecting said first and second lifting elements (32,34) and said second member (14) for moving said second member (14) in response to moving at least one of said lifting portions (40,42) of said first and second lifting elements (32,34).

4,365,694

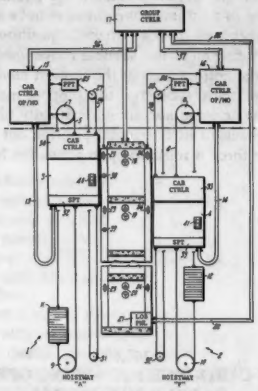
PREVENTING ELEVATOR CAR CALLS BEHIND CAR

Joseph Bittar, Simsbury, Conn., assignor to Otis Elevator Company, Farmington, Conn.

Filed Feb. 13, 1981, Ser. No. 234,078

Int. Cl.³ B66B 1/16

U.S. Cl. 187—29 R **2 Claims**



1. An elevator, including a shaftway having access to a plurality of floor landings in a building, comprising:

a car;

motion means for moving and stopping said car in the shaftway for servicing the landings;

transducer means associated with said motion means for providing movement signals indicative of the movement of said car along the shaftway;

a car call panel in said car including passenger-actuable means for providing car call button signals indicative of landings at which elevator stops are requested by passengers and means for providing visual indications to the passengers of landings for which car calls have been requested; and

signal processing means interconnected with said motion means and responsive to said movement signals and said car call button signals for providing committable floor signals indicative of the next floor landing at which the car could be stopped from the car position and velocity determined from said movement signals, for providing registered car call signals in response to said car call button signals, for periodically eliminating selected ones of said registered car call signals, for providing signals to said motion means to cause movement of said car to landings corresponding to said registered car call signals, and for providing advance signals indicative of the direction of movement of said car in the shaftway;

characterized by:

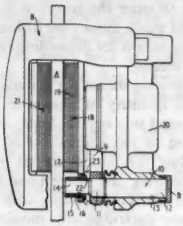
said signal processing means comprising means responsive to said committable floor signals and said advance signals to provide said registered car call signals only for landings indicated by said car call button signals at which the car can be stopped as it moves along the shaftway in its present direction of movement.

4,365,695

DISC BRAKE AND FRICTION PAD ASSEMBLY THEREFOR

Heinrich B. Rath, Vallendar, Fed. Rep. of Germany, assignor to Lucas Industries Limited, Birmingham, England

Filed Jun. 24, 1980, Ser. No. 162,639
Claims priority, application United Kingdom, Jun. 26, 1979, 7922203
Int. Cl.³ F16D 65/02
U.S. Cl. 188—73.39 10 Claims



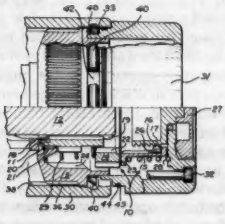
1. A spot-type disc brake comprising a caliper and torque plate, a friction pad assembly comprising a backing plate with a pad of friction material secured thereto being slidably supported on at least one pin having a portion which extends through an aperture in the backing plate, a sheath covering at least the extended portion of the pin to protect same, said sheath also passing through said aperture and extending towards the plane in which the face of the pad of friction material remote from the backing plate lies, said sheath lying within the periphery of the disc so as to be abraded by the disc as the pad wears away, and said sheath, during use, at all times covering all of the extended portion of the pin to protect all of the sliding surface thereof throughout the wear life of said friction material.

4,365,696

ONE-PIECE LOCKING CLUTCH

Thomas M. Telford, Gladstone, Oreg., assignor to Warn Industries, Inc., Kent, Wash.

Filed Nov. 24, 1980, Ser. No. 209,647
Int. Cl.³ F16D 11/04
U.S. Cl. 192—67 R 7 Claims



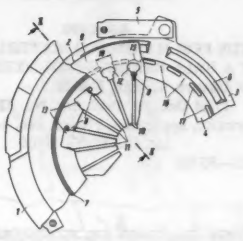
1. In combination with a vehicle wheel hub of the type having an opening for insertion of a clutch mechanism, a clutch housing including a clutch mechanism operable to lock and unlock the vehicle axle to the vehicle wheel hub, said clutch housing being secured to the vehicle wheel hub by a lock ring disposed around the clutch housing engaging an annular groove within the vehicle wheel hub opening, said lock ring in its at rest state having an outside diameter smaller than the inside diameter of the vehicle wheel hub opening.

4,365,697

FRICTION CLUTCH

Rudolf Hönemann, Ottersweier, Fed. Rep. of Germany, assignor to Luk Lamellen und Kupplungsbau GmbH, Buhl, Fed. Rep. of Germany

Filed Jul. 3, 1980, Ser. No. 165,545
Claims priority, application Fed. Rep. of Germany, Jul. 6, 1979, 2927391
Int. Cl.³ F16D 13/44
U.S. Cl. 192—89 B 12 Claims



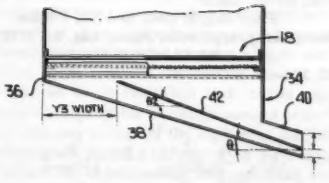
1. A friction clutch, comprising a diaphragm spring including a ring-shaped base and tabs extending radially inwardly from the base and separated by slots terminating radially outwardly in hole-like cutouts, a clutch part having a first roll-off support at one side of the spring, a substantially circular discrete second roll-off support at the other side of the spring, the second roll-off support being acted upon by the spring when the clutch is disengaged and the first roll-off support being acted upon by the spring when the clutch is engaged, and holding means securing the second support to the clutch part, the second support engaging the spring radially outwardly of the cutouts and having, in the vicinity of each of the cutouts, an interruption facing the spring and extending along at least 50% of the length of the respective cutout, as considered in the circumferential direction of the clutch.

4,365,698

MULTIPLE DISCHARGE CHUTE

Jerry L. Godwin, Hagerstown, Md., assignor to Kennecott Corporation, Stamford, Conn.

Filed Oct. 21, 1980, Ser. No. 199,360
Int. Cl.³ B65G 11/00
U.S. Cl. 193—2 B 9 Claims



1. A discharge chute operate to flow granular material therethrough, wherein said chute is, in operation, subjected to a continuous, generally vertical vibrating action, said chute comprising an upper housing portion adapted for receiving granular material, a bottom wall underlying said housing and extending lengthwise of said housing, said bottom wall starting at one end of said housing and sloping downwardly and generally towards the other end of said housing adapted for receiving granular material from a first portion of said housing, and at least one second sloping wall interposed between said bottom wall and said housing, said second wall starting at a point

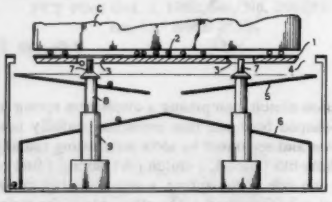
of said housing between said housing ends and sloping downwardly and generally towards said other end of said housing for receiving granular material from at least one second portion of said housing terminating at said housing other end, said bottom wall and said sloping second wall providing substantially increased flow capacity within substantially the same chute volume thereby permitting a lesser chute angle of slope, said first wall and said second wall being positioned such that the depth of granular material thereon is generally equivalent to the vertical dimension of said vibrating action.

4,365,699

APPARATUS FOR HANDLING MATERIALS BY MEANS OF A BALL BEARING-MOUNTED TABLE

Jean-Benoit Dussud, Meylan, France

Filed Dec. 29, 1980, Ser. No. 220,699
Claims priority, application France, Jan. 14, 1980, 80 00689
Int. Cl.³ B65G *13/00*
U.S. Cl. 193—35 SS **4 Claims**



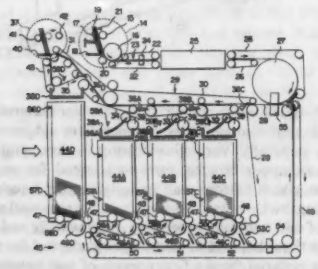
1. Apparatus for handling a load comprising a table with a horizontal plate and three nonaligned passages having walls below the plate and opening onto the plate, a plurality of ball bearings of the same diameter which roll freely on the plate and on which a load may be displaced, three retractable supports with tops and means for raising the supports through the respective passages until their tops attain a higher level than the tops of the ball bearings, so that the load becomes disengaged from the ball bearings, the distance, at any point, between the walls of a passage and the corresponding support being always greater than the diameter of the ball bearings so that the ball bearings may still fall through the passages when the supports are raised.

4,365,700

MONEY RECEIVING AND DISPENSING SYSTEM

Katsuhiko Arimoto, Omihachiman, and Masahiro Fujimoto, Kusatsu, both of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Aug. 8, 1980, Ser. No. 176,690
Claims priority, application Japan, Aug. 24, 1979, 54-108459
Int. Cl.³ G07D *11/06*
U.S. Cl. 194—2 **6 Claims**



1. A money receiving and dispensing system, comprising:

a plurality of money cases for storing monies of several denominations, respectively;

a stock money cartridge removably mounted in the system for collectively storing monies available in the system;

a plurality of entering means each for entering monies into the corresponding one of said money cases and stock money cartridge;

a plurality of feeding means for respectively feeding the monies stored in said money cases and stock money cartridge;

a money receiving means for receiving the money deposited into the system to store the received money in one of said money cases and stock money cartridge;

a money dispensing means for dispensing the money fed by one of said feeding means;

detecting and generating means for generating a money supply signal when the quantity of monies in any of said money cases has decreased to a certain level; and

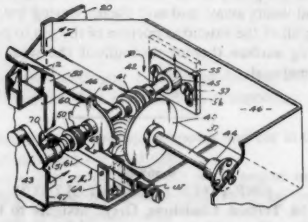
means, in response to the generation of said money supply signal, for feeding the monies stored in said stock money cartridge, distributing the corresponding ones of the fed monies into the particular money case and returning into said stock money cartridge any monies of denominations other than the denomination corresponding to said particular money case.

4,365,701

NEWSPAPER VENDING MACHINE

Currie Armstrong, and Clarence E. Christophersen, both of 255 W. Torrance Blvd., Carson, Calif. 90745

Filed Feb. 17, 1981, Ser. No. 234,981
Int. Cl.³ G07F *11/28*
U.S. Cl. 194—22 **8 Claims**



1. A coin-operated newspaper vending machine comprising an elongate vertical cabinet with top and bottom ends, laterally spaced vertical sides, a vertical back and a vertical front wall spaced forward from said back, a flat, smooth, forwardly and upwardly disposed newspaper support plate within the cabinet and having a lower forward edge spaced rearward from the front wall and inclined forwardly and downwardly at an angle at which a newspaper supported in flat engagement atop the plate and newspapers in stacked engagement above the plate will slide forwardly and downwardly from engagement with each other and from the plate, a discharge opening in the front wall below the support plate and a panel spaced rearward of the front wall and below the support plate to direct newspapers moving forwardly and downwardly from the support plate to said discharge opening, stop means releasably engaging the lower forward edges of newspapers above the support plate and including an elongate vertical stop post spaced rearward from the front wall and having an upper portion engaging the lower forward edges of said newspapers, manually operable drive means intermittently operable to move the stop post down to disengage the uppermost newspaper above the support plate, latch means releasably locking the drive means and including a trigger disposed in the path of newspapers moved forwardly and downwardly from above the plate, a stop part in said drive means, a movable latch part shiftable into and out of engagement with the stop part, means between

the trigger and the latch part to move the latch part into stopped engagement with the stop part when the trigger is moved in advance of a newspaper, and a coin mechanism with a coin-receiving slot accessible at the front of the cabinet and operable to receive and to release predetermined coinage deposited in the machine and to engage and move the latch part out of engagement with the stop part.

4,365,702

APPARATUS FOR TRANSPORT AND TEMPORARY STORAGE OF CIGARETTES OR THE LIKE BETWEEN PRODUCING AND PROCESSING MACHINE

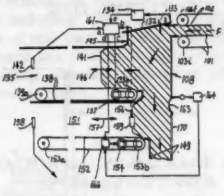
Gerhard Tolasch; Horst Büse, both of Hamburg, and Jürgen Bantien, Hamwarde, all of Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

Continuation of Ser. No. 6,221, Jan. 24, 1979, abandoned, which is a continuation of Ser. No. 804,338, Jun. 7, 1977, abandoned. This application Mar. 14, 1980, Ser. No. 130,392

Claims priority, application Fed. Rep. of Germany, Sep. 10, 1976, 2640719; Nov. 17, 1976, 2652363

Int. Cl.³ B65G *1/00*

U.S. Cl. 198—347 **22 Claims**



1. In an apparatus for transporting streams of cigarettes, filter rod sections or analogous rod-shaped articles from at least one producing machine to at least one consuming machine, the combination of storing means including a plurality of variable-capacity reservoirs, said reservoirs including a first surge bin and a second surge bin disposed below said first surge bin, each of said surge bins having an opening which constitutes an inlet during admission of articles into and an outlet during evacuation of articles from its interior; a first transporting unit including means for feeding articles into said surge bins when the output of said producing machine exceeds the requirements of said consuming machine; a second transporting unit having means for conveying articles from said surge bins to said consuming machine when the requirements of the consuming machine exceed the output of said producing machine; and control means for effecting the admission of articles into said first surge bin ahead of said second surge bin and the evacuation of articles from said second surge bin ahead of said first surge bin.

4,365,703

STORING ROD-LIKE ARTICLES

Dennis Hinchcliffe, London, and Eric A. Luddington, Ringwood, both of England, assignors to Molins Limited, London, England

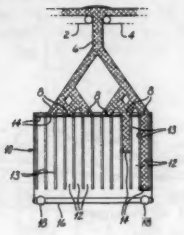
Continuation of Ser. No. 973,704, Dec. 27, 1978, abandoned. This application Aug. 10, 1981, Ser. No. 291,463

Claims priority, application United Kingdom, Jan. 11, 1978, 1017/78

Int. Cl.³ B65G *1/04*

U.S. Cl. 198—347 **20 Claims**

1. A conveyor system for rod-like articles of the tobacco industry, comprising conveyor means for moving articles as a continuous, multi-layer stream and having spaced means defining a plurality of outlets through each of which a substantially-continuous flow of said articles may be selectively delivered, movable reservoir means including a plurality of adjacent substantially-vertical compartments disposed in line in the direction of movement thereof and movable into registration with said conveyor means so that at least two compartments are positioned simultaneously adjacent at least two of said outlets so that each may receive a substantially-continuous multi-layer stream of articles moving downwards from said conveyor means, means for bounding a leading end of a stack



of articles in a compartment and for moving the leading end progressively so that a substantially-continuous stream of said articles extends from said conveyor means into the compartment, and means for closing said outlets so that said movable reservoir means may be separated from said conveyor means for replacement by further movable reservoir means.

4,365,704

LOG ALIGNMENT APPARATUS

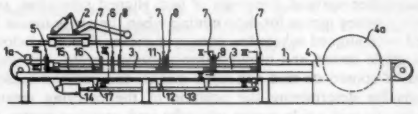
Carl-Johan Stenvall, 5264 Silkfors, Älvsbyn, Sweden (S-942 00)

Filed Oct. 24, 1980, Ser. No. 200,404

Claims priority, application Sweden, Oct. 29, 1979, 7908741

Int. Cl.³ B65G *47/24*

U.S. Cl. 198—395 **7 Claims**



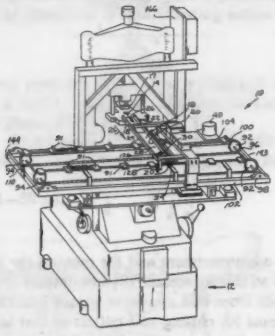
1. An apparatus for automatically aligning logs to be fed into a sawing machine for being sawn in relation to a predetermined vertical longitudinal plane through the sawing machine, the apparatus comprising members for carrying a log in said vertical longitudinal plane, a device for turning the log, sensing members connected to an evaluation and control unit, said sensing members being capable by outside sensing of the log to record in said unit any change of the log center in relation to said longitudinal plane during a turning of the log through one revolution, at least one of said sensing members being arranged for sensing the change of the log center in a vertical direction, at least one of the remaining sensing members being located in spaced relationship with respect to the at least one vertical sensing member and being arranged for sensing the change of the log center in a lateral direction in relation to the vertical longitudinal plane, each of the sensing members comprises two sensing arms arranged symmetrically in relation to the vertical longitudinal plane and interconnected for simultaneous movement, said arms being urged into abutting engagement with the log for sensing the same, and said unit on the basis of information obtained from the sensing members determines the optimum alignment position and permits the turning device to turn the log into the optimum alignment position.

4,365,705

PROCESS AND APPARATUS FOR CONTINUOUSLY LOADING PALLETS WITH CERAMIC ARTICLES

Joseph W. Zinck, Bryant, and Steven L. Affolder, Berne, both of Ind., assignors to CTS Corporation, Elkhart, Ind.

Filed Sep. 2, 1980, Ser. No. 183,244
Int. Cl.³ B65G 47/53, 47/78
U.S. Cl. 198—424 17 Claims



1. An apparatus for automatic, damage free handling of impact sensitive, friable unfired briquetted substrates supplied to said apparatus by a briquetting press means, comprising means for receiving the briquetted substrates and including substantially linear guide means proportioned to receive the briquettes which are advanced under continuous compression derived by serial nonbending engagement of the substrates along the line of movement with said guide means maintaining the alignment of said substrates and a bottom support base having a low friction surface characterized by a smooth nonresistant path uniformly nonimpeding to a slideable nonbuckling advancement of the plurality of aligned substrates advanced on said low friction surface, means for retracting a portion of said bottom support base so that upon retraction said guide means maintains the alignment of said aligned substrates to effect damage free vertical discharge of said aligned substrates, receiving sensor means for determining when the guide means is filled with aligned substrates, conveyor means disposed below said guide means and moving transversely thereto, carrying means disposed on said conveyor means, and position sensor means for determining the position of the carrying means relative to said guide means whereby said carrying means is positioned for receiving said aligned substrates upon discharge from said guide means which is disposed over said carrying means.

4,365,706

DEVICE FOR CLEANING CONVEYOR BELTS

Donald F. Bright, Scunthorpe, England, assignor to Champion Conveyor Components Limited, Doncaster, England

Filed Jan. 2, 1981, Ser. No. 218,283
Claims priority, application United Kingdom, Jan. 5, 1980, 8000345; May 30, 1980, 8017715; May 30, 1980, 8017716; Jul. 12, 1980, 8022851
Int. Cl.³ B65G 45/00
U.S. Cl. 198—499 14 Claims

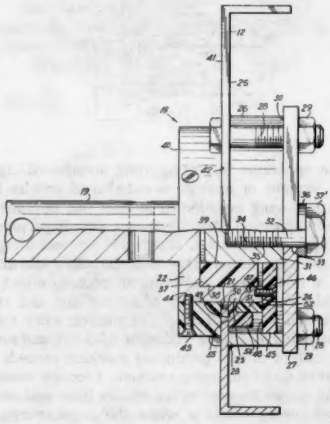
1. A cleaning device for use in continuous cleaning of a conveyor belt, said device comprising a cleaning member mounted on a lever which can move angularly about a pivot axis extending transverse to the run of the belt and said lever also carries a pressure member which is arranged to contact the face of the belt opposite to the face to be cleaned, the arrangement being such that when the belt is stationary the device is in a rest position with the cleaning member out of cleaning contact with the belt and when the belt moves the movement of the belt causes the pressure member to move the lever angularly about said pivot axis to an operative position in which the cleaning member is urged into cleaning contact with the surface of the belt.

4,365,707

DEAD SHAFT BEARING FOR CONVEYORS

Dennis E. Kemp, Jr., P.O. Box 167, South Orange, N.J. 07079

Filed Feb. 9, 1981, Ser. No. 232,579
Int. Cl.³ B65G 33/32
U.S. Cl. 198—672 14 Claims



1. A leakproof dead shaft bearing assembly for a screw conveyor or the like comprising a trough and wall having inner and outer surfaces and a through-going aperture, an auger support shaft having an auger attachment section at one end and a hollow cylindrical bearing mounting cup at the other, said cup extending through said aperture and having a mouth portion, a back plate mounted on said outer surface of said wall in parallel spaced relation thereto, a dead shaft section mounted on said back plate coaxially with said auger support shaft, said section extending into said cup through said mouth portion, an annular bushing member of anti-frictional material interposed between said cup and said dead shaft section, an annular wiper disk of anti-friction material surrounding and axially movably mounted on said cup, said disk including a seal surface abutting said outer surface of said end wall surrounding said aperture, and an annular elastomeric gland member having an inner diameter portion frictionally engaging and defining a seal surface with said cup, said gland member having a side surface biased against said wiper disk whereby said disk is rotatably coupled to said cup section and yieldably urged against said outer surface of said trough wall surrounding said aperture.

4,365,708

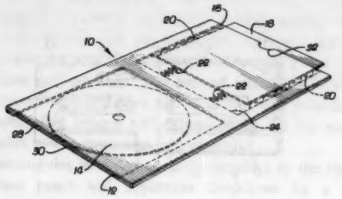
PROMOTIONAL PHONOGRAPH RECORD ALBUM

Philranzo M. Tyus, 18450 Ingomar St., Reseda, Calif. 91335

Continuation-in-part of Ser. No. 86,817, Oct. 22, 1979, abandoned. This application Dec. 29, 1980, Ser. No. 220,767

Int. Cl.³ B65D *85/57*; G11B *3/84*

U.S. Cl. 206—309 6 Claims



1. A phonograph record album comprising:

a first compartment for holding a phonograph record; and

a second compartment, coplanar with said first compartment, for holding an information card, said second compartment including side guides for maintaining lateral alignment of said card as it is moved into and out of said compartment, and further including card retention means for preventing complete removal of said card from said second compartment.

4,365,709

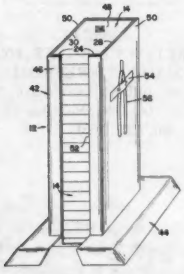
COMBINATION GAUZE PACKAGE AND GAUZE SPONGE DISPENSER

Thomas R. Lester, 105 Valencia Ct. N., Plant City, Fla. 33566

Filed Sep. 18, 1981, Ser. No. 266,375

Int. Cl.³ B65D *83/08, 5/70*

U.S. Cl. 206—362 6 Claims



1. A combination gauze package and gauze sponge dispenser for storing and dispensing singly a plurality of gauze sponges, said gauze package comprising an elongated package for retaining a plurality of gauze sponges in stacked array including a preformed tear portion, said preferomed tear portion comprises a top tear portion substantially horizontal plan and a front tear portion in a substantially vertical plane intersecting said top tear portion, and said gauze sponge dispenser comprising a hollow elongated body vertically supported on a base wherein said gauze sponge dispenser is correspondingly configured to said gauze package to receive said gauze package therein, said hollow elongated body including a slot formed on one vertical side thereof in registry with a portion of said preformed tear portion, said base including an opening formed therein adjacent the lower end of said slot such that a fully closed gauze package is inserted into said gauze sponge dispenser and said preformed tear portion is removed along the side and top portions partially exposing the plurality of stacked array of gauze sponges to permit the serial removal of the uppermost gauze sponge from the top of said gauze sponge dispenser.

4,365,710

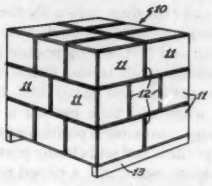
UNITIZED PALLETS

Elmer G. Swanson, Salinas, Calif., assignor to Champion International Corporation, Stamford, Conn.

Continuation of Ser. No. 657,489, Feb. 12, 1976, abandoned. This application Nov. 6, 1978, Ser. No. 958,280

Int. Cl.³ B65D *19/38*

U.S. Cl. 206—386 3 Claims



1. A unitized, self-sustaining pallet-load of containers made from a fibrous substrate which is wax-treated, comprising:

a support located at the bottom of said pallet-load;

at least one layer of said containers placed in a predetermined array on said support;

said containers each having a predetermined pattern application on at least the underside thereof of an adhesive of the type having a base polymer which is an ethylene vinyl acetate copolymer which is included in a blend of synthetic resins modified with mineral oils and microcrystalline wax.

4,365,711

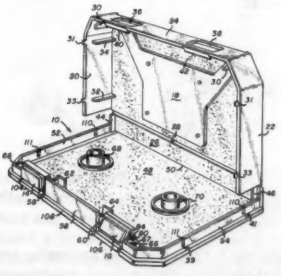
VIDEO CASSETTE STORAGE AND SHIPPING CONTAINER APPARATUS

Jerry M. Long, 382 Riverside Ave., Ben Lomond, Calif. 95005, and James A. Womack, 957 Verona, Livermore, Calif. 94550

Continuation-in-part of Ser. No. 1,227, Jan. 5, 1979, abandoned. This application Dec. 26, 1979, Ser. No. 107,176

Int. Cl.³ B65D *43/16*

U.S. Cl. 206—387 10 Claims



1. Cassette storage and shipping container apparatus comprising:

a unitary molded plastic body including

a closure portion including keeper means formed on one side thereof,

a back portion joined at one edge to said closure portion by an integrally formed first living hinge means formed on another side of said closure portion opposite said one side,

a base portion joined to another edge of said back portion opposite said one edge by an integrally formed second living hinge means, and

a first locking portion joined to an edge of said base portion other than the edge thereof defined by said second hinge means by an integrally formed third living hinge means, said first locking portion including a button-like projection extending outwardly therefrom and forming a push button when said first locking portion is rotated about said third hinge means and into a position substantially normal to said base portion, said first locking portion further including another projection disposed between said button-like projection and said third hinge means and extending outwardly therefrom, and

a resilient means engaged with said base portion and operative to hold said first locking portion in said substantially normal position while biasing same outwardly relative to said base portion and about said third hinge means, whereby when said back portion is rotated about said second hinge means into a position substantially normal to said base portion, and said closure portion is rotated about said first hinge means into a closed position in overlying generally parallel relationship to said base portion, said button-like projection lockingly engages said keeper means and secures said closure portion in said closed position thereby forming a closed chamber for containing a cassette, and whereby when a force is applied to said button-like projection causing it to rotate about said third hinge means and out of locking engagement with said keeper means, said another projection engages an edge of said closure portion and urges it away from said base portion thereby allowing said apparatus to be opened.

4,365,712

MAGNETIC TAPE CASSETTE RECEIVING CASING

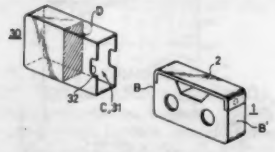
Kengo Oishi, and Osamu Suzuki, both of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 8, 1980, Ser. No. 214,163

Claims priority, application Japan, Dec. 19, 1979, 54-175898[U]

Int. Cl.³ B65D *85/67, 85/672*

U.S. Cl. 206—387 **5 Claims**



1. A storage case for receiving and protecting a substantially rectangularly shaped cassette having a rotatable cover member comprising, a shell of solid flexible material conforming to the shape of said cassette, an opening being formed in a side surface of said storage case, said side surface corresponding to either of side walls of said cassette except for a front surface covered by said rotatable cover member and a rear wall directly opposite said front surface, and inner dimensions of a transverse surface in central portions of said case inside said opening being slidably smaller than the outer dimensions of the side walls of said cassette to hold said cassette inside said storage case.

4,365,713

CASSETTE TAPE CASE MAGAZINE

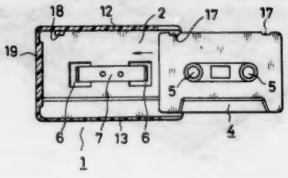
Kenji Ekuan, Tokyo, Japan, assignor to Alfa & Associates, Inc., Tokyo, Japan

Filed Nov. 25, 1981, Ser. No. 325,017

Claims priority, application Japan, Jun. 18, 1981, 56-88777[U]

Int. Cl.³ B65D *85/672*

U.S. Cl. 206—387 **7 Claims**



1. A cassette tape case magazine device for housing a cassette tape case having a pair of holes therein for receiving tape drive shafts and at least one recording claw hole,

a pair of substantially flat and broad opposing side walls,

a pair of narrow top and bottom walls joining said side walls together,

an end wall interconnecting said side and top and bottom walls at one end thereof,

the end of said magazine opposite to said end wall being open for permitting the entrance of said tape case into said magazine,

a flexible U-shaped retainer mounted on one of said side walls and having a pair of projections extending from the inner surface of said one side wall, said projections respectively fitting into said pair of holes in the tape case in retaining engagement therewith, and

a detent formed on the inner surface of one of said top and bottom walls, said detent fitting into the claw hole of said case in retaining engagement therewith.

4,365,714

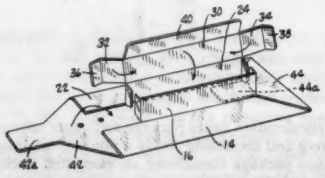
ONE-PIECE SHEETSTOCK BLANK AND A PACKAGE MADE THEREFROM

John S. Doyel, 404 W. 20th St., New York, N.Y. 10011

Filed Jul. 14, 1981, Ser. No. 283,336

Int. Cl.³ B65D *73/00*

U.S. Cl. 206—461 **2 Claims**



1. A one-piece sheetstock blank foldable along scorelines to form a package comprising a flat rectangular base and a parrelepiped-shaped hollow container which extends forwardly from the base and has its backside at the base, has its left, right, top and bottom sides extending forwardly from the base and has its front side parallel to and spaced from the base, said base having a peripheral portion which is made up of at least two thicknesses of the sheetstock and surrounds the container to the left, top, right and bottom thereof, said one-piece blank comprising:

a rectangular base panel coextensive with said flat base and having top, bottom, left and right sides;

a rectangular first left panel extending to the left of the base

panel and separated therefrom by a scoreline, wherein when the blank is folded to form said package said first left panel is folded over the base panel at said scoreline to form together with the base panel a double thickness portion of the flat base which is to the left of the container;

a rectangular second left panel extending to the left of the first left panel and separated therefrom by a scoreline, a first flap and a second flap which extend up and down, respectively, from the top and bottom ends, respectively, of the second left panel and are separated therefrom by respective scorelines, wherein when said blank is folded to form said package, said second left panel forms the left side of the container and said first and second flaps are concealed behind and extend along the top and bottom sides of the container, respectively;

a rectangular first right panel extending to the right of the base panel and separated therefrom by a scoreline, wherein when the blank is folded to form said package the first right panel is folded over the base panel at the last recited scoreline to form, together with the base panel, a double thickness portion of the flat base which is to the right of the container;

a rectangular second right panel extending to the right of the first right panel and separated therefrom by a scoreline, and a third flap and a fourth flap which extend up and down, respectively, from the top and bottom ends, respectively, of said second right panel and are separated therefrom by respective scorelines, wherein when the blank is folded to form said package said second right panel forms the right side of the container and said third and fourth flaps are concealed behind and extend along the top and bottom sides of the container, respectively;

a rectangular third right panel extending to the right of the second right panel and separated therefrom by a scoreline, a fourth flap and a fifth flap extending up and down, respectively, from the top and bottom ends of the third right panel and separated therefrom by the respective scorelines, a sixth flap extending up from the top end of the fourth flap and separated therefrom by a scoreline and a seventh flap extending down from the bottom end of the fifth flap and separated therefrom by a scoreline, wherein when the blank is folded to form said package the third right panel forms the front side of the container, the fourth and fifth flaps from the top and bottom sides of the container, respectively, and the sixth and seventh flaps are concealed into the container and extend over and along the flat base toward each other;

a fourth right panel which extends to the right of the third right panel and is separated therefrom by a scoreline, wherein when the blank is folded to form said package, the fourth right panel is concealed into the container and extends behind and along the inside of the left side thereof;

a top flap extending up from the base panel and separated therefrom by a top scoreline, and a bottom flap extending down from the base panel and separated therefrom by a bottom scoreline, wherein in the folding of the blank to form said package and after the folding as recited of the first left and first right panels, the top and bottom flaps are folded along the top and bottom scorelines respectively over respective parts of the first left panel and first right panel and over the base panel to form respective portions of the flat base which are at least two thicknesses of the sheetstock and extend above and below the container, respectively, wherein the top extremity of the top flap and the bottom extremity of the bottom flap are concealed within said container, extending toward each other along the base panel.

4,365,715

PACKAGE ASSEMBLY AND METHOD OF PACKAGING

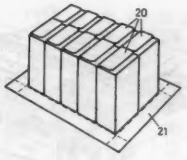
Alwin Egli, Beringen, Switzerland, assignor to SIG-Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland

Filed Feb. 6, 1981, Ser. No. 232,418

Claims priority, application Switzerland, Feb. 15, 1980, 1275/80

Int. Cl.[3] **B65D** *85/72, 51/16;* **B65B** *63/02*

U.S. Cl. 206—524.8 **10 Claims**



1. A package assembly comprising in combination:

(a) a group formed of a plurality of individual, gas-pervious packages;

(b) a gas-impervious wrapper surrounding said group airtight; and

(c) a one-way pressure relief valve affixed to said wrapper for discharging gases from the space between said wrapper and said individual packages.

4,365,716

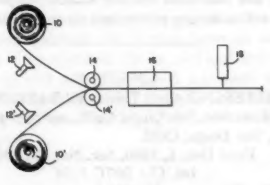
PEELABLE SEAL

William E. R. Watt, Barto, Pa., assignor to Pharmachem Corporation, Bethlehem, Pa.

Division of Ser. No. 964,453, Nov. 29, 1978, Pat. No. 4,264,392, which is a continuation of Ser. No. 830,051, Sep. 2, 1977, Pat. No. 4,183,434. This application Oct. 20, 1980, Ser. No. 189,033

Int. Cl.[3] **B32B** *31/20;* **C09J** *5/02*

U.S. Cl. 206—632 **9 Claims**



1. A peelable seal which is formed with at least two extruded polyolefin film members by the simultaneous application of controlled heat and pressure to said film members at the portion to be sealed, wherein at least one surface of at least one of the polyolefin film members at the portion to be sealed is oxidized by treatment with corona discharge so that the surface crystals formed by extrusion are modified whereby the simultaneously applying of controlled heat and pressure softens the modified crystals at the contacting surface to partially fuse the crystals at the contacting surface while maintaining the integrity of the crystals, and the modified crystals form an interface between the polyolefin film members at the seal portion.

5. A flexible container comprising a polyolefin film and a peelable seal according to claim 1 said container having a substantia' portion of its periphery weld sealed.

4,365,717

FEED APPARATUS AND METHOD

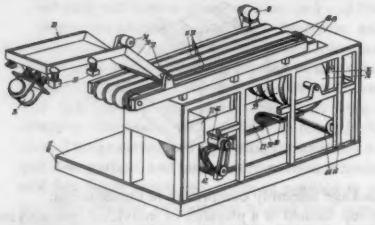
Alan M. Stone, Victoria, Australia, assignor to Sphere Investments Limited, Nassau, The Bahamas

Continuation of Ser. No. 218,463, Dec. 22, 1980, abandoned, which is a continuation of Ser. No. 24,776, Mar. 28, 1979, abandoned. This application Oct. 5, 1981, Ser. No. 308,592

Claims priority, application South Africa, Apr. 24, 1978, 78/2327; Jun. 7, 1978, 78/3250

Int. Cl.³ B07C 5/02

U.S. Cl. 209—539 **5 Claims**



5. A method for feeding objects in such a way that they are arranged into a plurality of primary moving streams of spaced apart objects comprising forming said primary streams of objects on a first moving support surface having a horizontal component of motion; projecting the objects in said primary stream from the first moving support surface and allowing the projected objects to move in a downwardly curving free flight trajectory in which they move unimpeded with a horizontal component of movement and are accelerated downwardly by gravity whereby to increase their spacing in the direction of movement; catching the projected objects on a second support surface by moving said second support surface downwardly in the path of said free flight trajectory such that the objects impinge smoothly on the second support surface; and carrying the objects on said second moving support surface through an arcuate path which curves against the direction of the horizontal component of movement of the objects in the free flight trajectory and thence along a straight path as a plurality of parallel secondary streams of spaced apart objects, whereby the objects are stabilized on the second support surface by centrifugal action during movement through said arcuate path.

4,365,718

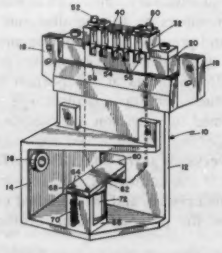
TICKET METERING AND THROAT BARRIER MODULE

Darrell V. Howerton, San Diego, Calif., assignor to Cubic Western Data, San Diego, Calif.

Filed Dec. 1, 1980, Ser. No. 211,030

Int. Cl.³ B07C 5/04

U.S. Cl. 209—586 **6 Claims**



1. A ticket metering module for detachably mounting in interfacing relation to an adjacent ticket processing machine for controlling the receipt of tickets into a ticket processing machine, said module comprising:

a base support frame;

housing means including first and second plate members mounted on said support frame and cooperatively positioned for defining a ticket metering passage having an inlet and outlet and a generally rectangular cross-sectional configuration of a predetermined dimension;

said housing including finger means projecting outwardly at said inlet and said outlet for cooperative interfacing of said passage with a like ticket passage of adjacent ticket processing modules; and

a barrier member reciprocably mounted adjacent the inlet of said passage and selectively movable transverse of said passage and into blocking and nonblocking positions across said inlet for selectively blocking the passage of a ticket into said passage.

4,365,719

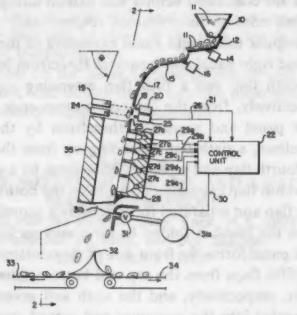
RADIOMETRIC ORE SORTING METHOD AND APPARATUS

Leonard Kelly, 3 Oakwood Rd., Peterborough, Ontario K9J IN2, Canada

Filed Jul. 6, 1981, Ser. No. 280,235

Int. Cl.³ B07C 5/346

U.S. Cl. 209—589 **9 Claims**



1. A method for sorting particles of radioactive material which includes the steps of

arranging the particles in a single line moving in one direction;

successively discharging the particles into a gravity-accelerated trajectory;

providing, along the trajectory, means for determining individual particle velocity and means for identifying the time at which each particle occupies a predetermined position in the trajectory, and for producing signals representative of the velocity and time-position determination;

providing, along the trajectory, a plurality of radiation detectors arranged so that each detector is consecutively exposed to each particle for producing signals representative of counts of the radiation activity of each particle;

accumulating counts from the plurality of detectors for each particle;

diverting from the trajectory selected ones of the particles to form two streams of particles, one stream including particles whose accumulated counts exceed a predetermined number and the other including the remainder; and

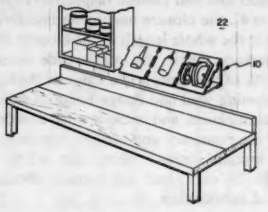
separately collecting the particles from the two streams.

4,365,720

TOOL HOLDER

Edward S. Kaneshiro, 452 Harbor Ter., Bartlett, Ill. 60103

Filed Aug. 25, 1980, Ser. No. 181,058
Int. Cl.[3] A47F 5/08
U.S. Cl. 211—60 T 3 Claims



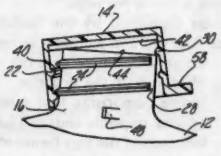
1. A tool holder for storing and displaying tools, said tool holder being of a three-piece construction formed from sheet material which is folded and assembled to form a generally right angle triangle, said tool holder having a back wall which has an upper end portion which is folded at a generally 45 degree angle and a lower end portion which is folded at a generally 90 degree angle, said back wall including means for removably affixing said tool holder to a support surface, a top wall which has end portions which are folded at a generally 45 degree angle, and a bottom wall, one of said end portions of said top wall being overlapped with the upper end portion of the back wall and said bottom wall being seated on the lower end portion of the back wall and the other one of said end portions of said top wall to thereby support said top wall to provide a sloped surface, said top wall having a cut-out therein proportioned to receive and support therein a tool.

4,365,721

CHILD RESISTANT CLOSURE AND CONTAINER ASSEMBLY

Gary V. Montgomery, Evansville, Ind., assignor to Sunbeam Plastics Corporation, Evansville, Ind.

Filed Jul. 10, 1981, Ser. No. 282,044
Int. Cl.[3] B65D 55/02
U.S. Cl. 215—217 11 Claims



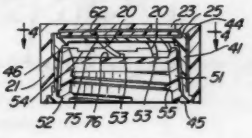
1. A container and closure assembly comprising: a container having a neck member forming an opening into said container, a closure for closing said opening having a cylindrical skirt member fitting over said neck member, complementary threads on the exterior of said neck member and the interior of said skirt member and being engageable with each other to close said container, said threads on one of said members being interrupted over a predetermined arcuate span to form a gap, said threads on the other of said members forming a first threaded portion having an arcuate span less than said predetermined span and a second threaded portion, said complementary threads being simultaneously engageable to permit rotation of said closure into sealing engagement with the neck member of said container, said closure being rotatable to a predetermined location relative to said container in which said first threaded portion is in alignment with said gap whereby said cap can be tilted to an open position.

4,365,722

REMINDER CLOSURE

Steven G. Kramer, 60 El Verano Way, San Francisco, Calif. 94127

Filed Jun. 26, 1981, Ser. No. 277,985
Int. Cl.[3] B65D 55/02
U.S. Cl. 215—220 23 Claims



1. A closure member for a container, including in combination:

an inner housing having means for mounting to the container,

indicia means disposed in a relatively stationary manner on said inner housing and adapted to rotate with said inner housing,

an outer housing rotatably mounted on and adapted to nest about said inner housing and having at least one indicator station means thereon aligned with said indicia means on said inner housing effective to pass freely the indicia thereon past said indicator station means for viewing,

at least one first abutment means mounted on one of said inner or outer housings, between said inner and outer housings, and

at least one second abutment means mounted to the other of said inner or outer housings opposite said one of said housings having at least one first abutment means, said second abutment means positioned to engage each of said first abutment means during rotation of said outer housing in a manner effective to stop rotation of said inner and outer housings relative to each other in one direction when said first and second abutment means are engaged, and yieldingly resist rotation of said inner and outer housings relative to each other in the opposite direction when said second abutment means is so engaged with at least one of said first abutment means, and said indicia being so disposed on said indicia means on said inner housing that said indicia are visible and aligned with said indicator station means when said first and second abutment means are engaged.

4,365,723

PEDESTAL HOUSING FOR CABLE TELEVISION COMPONENTS

Michael A. Palermo, 1165 S. Beecham Rd., and James L. Mason, 1169 S. Beecham Rd., both of Williamstown, N.J. 08094

Filed Jul. 22, 1981, Ser. No. 286,098
Int. Cl.[3] H02G 3/08; B65D 6/00
U.S. Cl. 220—3.8 3 Claims

1. A substantially rectangularly shaped housing for cable television components comprising;

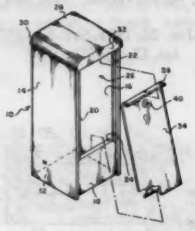
a rear wall, a pair of side walls, a top wall and a lower partial front wall, all of said walls being rigidly secured together;

the front of said housing having an opening therein above said partial front wall;

said top wall extending forwardly of said housing and overlying said opening, said partial front wall and the forward edges of each of said side walls, the front end of said top extending downwardly;

a cover member having a size slightly larger than said opening and being adapted to cover and close the same;

said cover member inciuding a rearwardly and downwardly extending flange secured to the lower portion of the back thereof, said flange being adapted to fit over and behind



the upper edge of said partial front wall after the uppermost portion of said cover member is positioned within the forward extension of said top wall, and

locking means for preventing the unauthorized removal of said cover member.

4,365,724

ATTACHING CLOSURE TO CONTAINERS

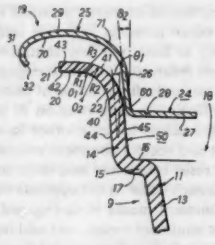
Richard G. Walden, Childrey, Near Wantage, England, assignor to Metal Box Limited, Reading, England

Filed Dec. 17, 1980, Ser. No. 217,565

Claims priority, application United Kingdom, Dec. 21, 1979, 7944037

Int. Cl.³ B65D *8/04*

U.S. Cl. 220—67 **1 Claim**



1. In combination, a plastics container and a metal end closure, the end closure having a seaming ring which comprises a frustoconical chuck wall, an arcuate seaming panel which extends radially outwardly from the chuck wall to a free edge provided by a peripheral curl and an end panel which is radially inboard of the chuck wall, the plastics container having a base and an upstanding integral side wall with a seaming ring defining a mouth of the container, the seaming ring being adapted for double-seaming engagement to the seaming ring of the end closure, the container seaming ring comprising a frustoconical seaming wall, a substantially radially outwardly directed flange providing a free peripheral edge to the container, an arcuate wall portion joining the seaming wall and the flange and an annular shoulder axially spaced from said flange and radially inboard of said seaming wall, the arrangement being such that, when the closure is in position for seaming, the seaming rings of the container and closure are in substantially continuous mutual contact along the whole axial length of the container seaming ring, with the container seaming wall generally adjacent to and in contact with the chuck wall of the closure and with the arcuate wall portion and flange of the container generally adjacent to and in contact with the seaming panel of the closure within the curl thereof but with the end panel and annular shoulder being in axially spaced relationship, the seaming wall and chuck wall defining a respective seaming wall angle and a chuck wall angle, the degrees of which are measured relative to the respective container axis and closure axis, said seaming wall angle lies within the range of up to 5°, said chuck wall angle lies within the range 5° to 9°, the difference between the seaming wall angle and the chuck wall angle of the container and end closure respectively lying within the range of 2° to 4°, the closure making an interference fit in the container over the whole length of the closure chuck wall, the negative clearance where the interference occurs lies within 0.1% and 1.0% of the appropriate value of the container diameters, said seaming wall and flange being of substantially constant material thickness, and in the seamed condition, the seaming rings of the container end closure remain in substantially continuous mutual contact along the whole axial length thereof while the end panel and annular shoulder remain in axially spaced relationship.

4,365,725

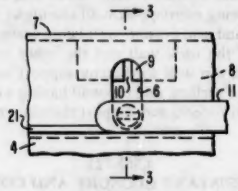
BASKET WITH SWING AWAY DOUBLE LOCKING HANDLE

William Pfeifer, Springdale, Pa., assignor to Dravo Corporation, Pittsburgh, Pa.

Filed Jul. 28, 1981, Ser. No. 287,710

Int. Cl.³ B65D *25/28, 25/32*

U.S. Cl. 220—96 **10 Claims**



1. A basket and a U-shaped handle extending across the basket which can be locked into a vertical position by lifting up on the handle and which can be unlocked and rotated to a stowed position when released comprising:

the basket having side walls, each side wall having an upper edge and a first vertically disposed slot therethrough, located beneath the upper edge;

a locking means supported by the basket and positioned opposite the first slot and having a second vertically disposed slot with an open lower end, the second slot being horizontally aligned with the first slot;

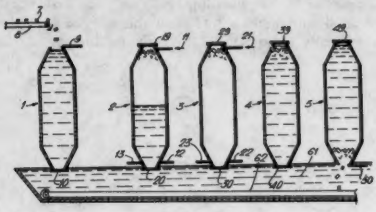
the U-shaped handle comprising two substantially parallel legs depending from opposite ends of a hand grasping base portion, the free ends of the legs terminating in outwardly directed locking tabs, each locking tab comprising a support bar adjacent the respective leg and a locking bar axially aligned with the support bar, the locking bar having a flat side oriented parallel to a plane formed by the legs of the handle and being slidable within and closely fitting with the second slot, the support bar being slidably and rotatably received in the first slot in the side wall of the respective basket, the first vertical slots being of such a length that with the support bars of the locking tabs on the legs located at the bottom of the first slots the handle can be rotated between a generally horizontal position and a vertical position and such that when the handle is lifted while in the vertical position the locking bars enter the open ends of the second vertical slots in the locking means providing locking action to prevent rotation of the handle, the flat sides of the locking bars furnishing additional contact area with the second vertical slots.

4,365,726

PRESSURE VESSELS CLOSURE MEANS

Michael Broderick, Dublin, Ireland, assignor to Odenberg Investments Limited, Blackrock, Ireland

Filed Sep. 21, 1981, Ser. No. 304,094
Claims priority, application Ireland, Sep. 25, 1980, 2010/80
Int. Cl.³ B65D *55/00, 43/20*
U.S. Cl. 220—211 **10 Claims**



1. A closure for a large sized opening in a pressure vessel, the opening having a peripheral sealing edge, comprising

(a) a lid movable in a longitudinal direction relative to the opening between an open position of the lid and a covering position in which the lid is aligned with the opening but spaced apart from the sealing edge of the opening and displaceable in a direction perpendicular to the longitudinal direction between the covering position and a sealing position in which the lid is in sealing engagement with the edge of the opening,

(b) bearings fixed to the lid,

(c) at least two shafts rotatably mounted in the bearings and coupled for rotation together,

(d) rollers mounted on the shafts, said rollers being eccentric relative to said bearings,

(e) a support surface or surfaces extending in said longitudinal direction, said rollers travelling thereon during movement of the lid between its open and covering positions,

(f) drive means for moving the lid in the longitudinal direction and for applying torque to the shafts in one sense during closing movement of the lid and in the opposite sense during opening movement of the lid,

(g) at least one follower member fixedly secured to one of the shafts and

(h) guide means engageable by the follower member or members or preventing rotation of the coupled shafts at least during a closing movement of the lid from its open position to its covering position, and for permitting rotation of the coupled shafts when the lid is in the covering position, the rotation of the shafts displacing the lid in said perpendicular direction between the covering position and the sealing position by the relative eccentricity of said rollers and bearings.

4,365,727

DEVICE FOR SQUEEZING-OUT VISCOUS MATERIALS FROM TUBES MADE OF PLASTICS

Mark Shmelkin, Haemek st. 1/4, Nesher, Israel

Filed Aug. 13, 1980, Ser. No. 177,636
Int. Cl.³ B65D *35/28*
U.S. Cl. 222—97 **3 Claims**

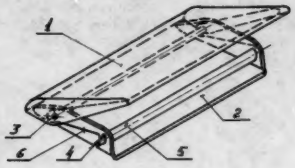
1. A device for squeezing out viscous material from tubes made of plastic comprising:

first and second generally rectangular frames with first and second end flanges and side flanges provided about their perimeters;

a hinge axle passing through the side flanges of both frames to pivotally secure the frames together along the first end flanges thereof;

a squeezing roll with ends being inserted in slots provided in the side flanges of the second frame adjacent the second end flange thereof, both ends of said squeezing roll being provided with holes;

a spring, a transverse part of which is positioned along the



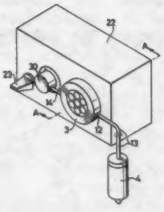
second end flange of the first frame and the arms of which are positioned along the side flanges of the second frame, the ends of said arms being secured in the holes provided in said squeezing roll.

4,365,728

LIQUID DISCHARGE APPARATUS

Sadao Tokorozawa, Nakai, and Toyoji Shimizu, Oi, both of Japan, assignors to Pilot Man-Nen-Hitsu Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 7, 1979, Ser. No. 18,394
Claims priority, application Japan, Mar. 13, 1978, 53-28391
Int. Cl.³ B67D *5/54;* **B43K** *5/02*
U.S. Cl. 222—209 **9 Claims**



1. An open loop system for selectively controlling and discharging liquid from a pressurized reservoir comprising:

peristaltic pump means having a depression and delivery system including forced feed means comprising an elastic tube (**13**) having an air intake end (**14**) for introducing air, pusher means (**11**) mounted for rotation on a drive shaft, said pusher means sequentially engaging said tube and squeezing and releasing said tube to produce an output,

a continuously driven A.C. motor (**2**) connected to said drive shaft,

speed setting means comprising a closed loop voltage control system (**1**) electrically connected with said A.C. motor for varying the rotational speed of said motor to regulate the output of said peristaltic pump in accordance with user demand,

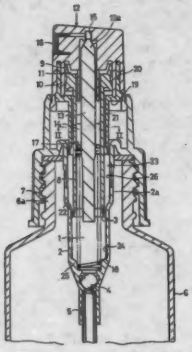
an air discharge end (**15**) of said elastic tube located within said pressurized liquid reservoir (**18**), to deliver the regulated output of said pump, and

liquid discharge means (**20**) integral with said pressurized liquid reservoir discharging fluid from said reservoir in accordance with the user demand thereof as established by said speed setting means.

4,365,729
ATOMIZER

Tadao Saito; Takao Kishi, and Yoshiyuki Kakuta, all of Tokyo, Japan, assignors to Yoshino Kogyosho Co., Ltd., Tokyo, Japan

Filed Dec. 9, 1980, Ser. No. 214,957
Claims priority, application Japan, Sep. 22, 1980, 55-131981
Int. Cl.³ B05B *9/00*
U.S. Cl. 222—321 **5 Claims**



1. An atomizer comprising: pressurizing means including a first cylinder and a first piston partly for sucking up a liquid from a liquid container through a check valve into a pressurizing chamber and partly for pressurizing the same; a second piston disposed above and connected to the first-named piston through a cylindrical member, the second-named piston being made to have a larger diameter than that of the first-named piston; a second cylinder receiving the second-named piston in a slidable manner while forming an actuating chamber having communication with said pressurizing chamber; a valve member connected to both the first- and second-named pistons; an atomizing head including a communication hole, which is to be opened and closed by said valve member, and a nozzle, which has communication with said communication hole, for depressing the first- and second-named pistons through their abutment engagements with said valve member; and a spring upwardly urging the first- and second-named piston in a manner to expand said pressurizing chamber, whereby, when the pressure in said pressurizing chamber is boosted by a pumping action, the second-named piston is moved down against the urging force of said spring so that said communication hole is opened thereby to atomize the liquid out of the nozzle,

wherein the improvement resides: in that an annular stopper is provided on the lower end portion of the second-named cylinder thereby to make it possible to regulate the stroke, in which the second-named piston is moved in the direction to expand said actuating chamber; in that the first-named cylinder has a larger diameter at its upper portion than at its lower portion; in that said stopper has its lower portion merging into a depending cylinder; and in that said depending cylinder has its lower portion slidable in the larger-diameter portion of the first-named cylinder.

4,365,730
DYNAMIC PRESSURE RELIEF DEVICE FOR STORAGE ELEVATION

Morris J. Ezban, 57-10 Junction Blvd., Elmhurst, N.Y. 11373

Continuation-in-part of Ser. No. 649,530, Jan. 15, 1976, abandoned. This application Jun. 29, 1977, Ser. No. 811,374
Int. Cl.³ B65D *83/06*
U.S. Cl. 222—547 **6 Claims**

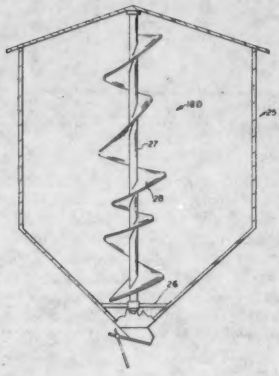
5. A storage elevator building for storage grain or granular material comprising:

an elongated storage bin having vertically extending circumscribing side walls in which a supply of said material is adapted to be stored,

means defining a discharge opening disposed adjacent the lower end of the bin whereby said material is discharged therefrom,

means defining a closure for said opening

and a pressure relief means disposed in said bin for relieving the dynamic pressures exerted on the vertically extending side walls of the bin by the stored material during the discharge of said material thereby enabling said side walls to be sized to resist a loading which is less than the sum of the lateral forces normally acting on said side walls due to the static



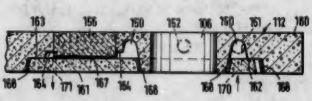
pressures imparted to said side walls by said stored material and the increase in said lateral forces due to the dynamic pressures otherwise imparted on said side walls in the absence of said pressure relief means by the flow of said material during discharge, and to enhance the flow of material during a discharge of said material through said opening,

said pressure relief means comprising a screw which extends longitudinally along the interior of said bin in spaced relationship to said vertically extending side walls so that a rotational motion is imparted to the stored material during the discharge of said material wherein the pitch of said screw varies along its axis.

4,365,731
REFRACTORY STRUCTURES

Hans R. Fehling, Zug, Switzerland, and Horst Hase, Wiesbaden, Fed. Rep. of Germany, assignors to Didier-Werke, A.G., Wiesbaden, Fed. Rep. of Germany

Continuation of Ser. No. 763,160, Jan. 27, 1977, abandoned. This application Aug. 26, 1980, Ser. No. 181,476
Int. Cl.³ B22D *37/00*
U.S. Cl. 222—600 **28 Claims**



1. A refractory structure comprising a unitary body of refractory concrete material defining at least one discharge passage for molten metal passing through the body, at least one reinforcing element having at least one of its entire sides in intimate contact with said body and interlocked mechanically with the refractory concrete with which it is in intimate contact, the reinforcing element being separated by refractory concrete material from any surface of the refractory structure

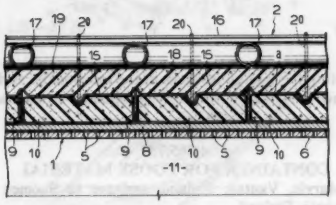
which contacts the molten metal in use, and means defining at least one duct for a working fluid in the body out of communication with said discharge passage when open.

4,365,732

METHOD AND APPARATUS FOR SETTING MARKINGS IN A FABRIC

Yasuo Nakano, Yasudashi, Japan, assignor to Kabushiki Kaisha Bon'ni, Hyogoken, Japan

Filed Sep. 19, 1980, Ser. No. 188,750
Claims priority, application Japan, Sep. 25, 1979, 54-123622
Int. Cl.³ A47F 7/00; D06F 71/34
U.S. Cl. 223—57 **3 Claims**



1. A method for setting markings in a fabric by pressing the fabric between pressing surfaces having a pattern thereon, the improvement comprising:

adjusting hard ridges having good heat conductivity in accordance with a predetermined pattern, said hard ridges being disposed on at least one pressing surface and said pressing surface being covered with a cushion member;

pressing a fabric between the pressing surfaces whereby an edge of each of said hard ridges is pressed against the cushioning member of the opposing pressing surface through said fabric;

feeding heat steam to said fabric and hard ridges through said cushioning members;

thereafter feeding hot air to said fabric and hard ridges through said cushioning members; and

removing said hot air under vacuum suction for cooling down said fabric and said hard ridges.

4,365,733

SYSTEM FOR PASSING ELONGATED PAPER THROUGH A REPRODUCING APPARATUS

Thomas A. McNew, P.O. Box 82432, Oklahoma City, Okla. 73148

Filed May 7, 1981, Ser. No. 261,583
Int. Cl.³ B65H 17/42; G03B 27/58
U.S. Cl. 226—109 **41 Claims**

1. A system for passing long, fan-folded documents and copy paper through a reproducing apparatus comprising:

a collapsible, upright stand including:

a pair of opposed, parallel, vertically extending lower side frame members;

a plurality of roll supporting elements in said lower side frame members;

a pair of horizontally extending floor plates connected to, and extending from, said lower side frame members;

a pair of opposed, parallel, vertically extending upper side frame members hingedly connected to said lower side frame members for pivotation from a position above, and in coplanar alignment with, said lower side frame members to a position alongside of, and parallel to, said lower side frame members;

paper guide means above said upper side frame members; and

a support rod extending between said upper side frame members and detachably connected to, and supporting, said paper guide means;

a reproducing apparatus adjacent said upright stand and having said paper guide means extending into contact therewith;

a document feed tray engaged with the upper side of said reproducing apparatus for feeding thereto an elongated document to be copied; and

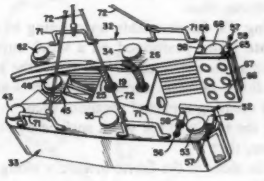
a document collection tray engaged with the upper side of said reproducing apparatus at a location horizontally spaced from said feed tray for receiving a copied document from said reproducing apparatus.

4,365,734

SPLICING MACHINE AND METHOD

Roderick E. Harris, Miami, Fla., assignor to Gang-Nail Systems, Inc., Miami, Fla.

Filed Mar. 4, 1980, Ser. No. 127,033
Int. Cl.³ B27F 7/15
U.S. Cl. 227—152 **6 Claims**



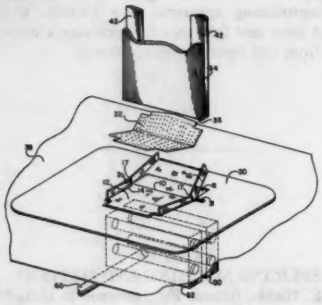
1. A splicing machine for applying fasteners for joining together wooden members, said machine comprising a frame, two side by side lever arms each arm being pivotally coupled to said frame at a location intermediate its ends, said lever arms having releasable fastener mounting means on one pair of adjacent ends for holding fasteners to be driven into the wooden members and having the other pair of adjacent ends operably connected to a motor mounted on said frame, said motor being a fluid pressure motor having a reciprocable output rod connected by toggle link means to said other pair of ends of said lever arms and being capable of being actuated for rocking both arms between one position wherein said one pair of adjacent ends is separated for mounting the fasteners thereon and another position wherein the arms are rocked to drive said fasteners into the wooden members disposed between them, said lever arms having longitudinally grooved and ribbed inner sides facing each other and said frame being correspondingly interfittingly grooved and ribbed so that said arms are strengthened against forces acting perpendicular to the pivot axis of said lever arms, said rod of said motor being fixed to a multiple clevis member presenting alternate grooves and ribs, said clevis member being connected to said other pair of ends of said arms by associated pivoted toggle links, said toggle links being interleaved with said ribs of said clevis member and extending between the clevis member and each arm and said fastener mounting means maintaining such fasteners to be driven into the wooden members in a substantially parallel relationship and said fastener mounting means including opposed platens mounted for limited rocking on said one pair of lever arm ends and being able to transmit the driving force for driving the fasteners into the wooden members.

4,365,735

FORMING A POCKET WELT

Raymond A. Princiotta, 208 N. Concord Ave., Havertown, Pa. 19083, and Antonio Salvucci, 131 Windswept Dr., Feasterville, Pa. 19047

Filed Sep. 22, 1980, Ser. No. 189,050
Int. Cl.³ A41H 33/00
U.S. Cl. 228—38 11 Claims



1. A method of forming a pocket welt from fabric having a finished surface and an opposite unfinished surface which comprises:

cutting the fabric into pieces having opposite sides and a top and bottom, then

positioning the fabric within an opening in a template, the template being positioned on a work surface so that its finished surface is faced downwardly, the surface having a multiplicity of holes therein through which air may be drawn creating a partial vacuum, then

securing the fabric to the work surface by creating a partial vacuum, then

folding the sides of the fabric inwardly along predetermined lines, then

folding the fabric inwardly about a predetermined line passing between the sides of the fabric by forcing the fabric through a slot in the surface by a blade which is adapted to pass through the slot, so that it is positioned between two platens located below the surface, then

withdrawing the blade, the fabric being maintained between the platens due to its resilience, and then

pressing the fabric to form creases in the fabric at the folds by causing the platens to move toward each other.

4,365,736

METHOD OF MANUFACTURING HIGH STABILITY JOINT

James E. Stumm, 4983 Southcrest Ave., San Diego, Calif. 92110

Division of Ser. No. 84,106, Oct. 12, 1979, Pat. No. 4,330,221. This application Apr. 27, 1981, Ser. No. 257,702
Int. Cl.³ B23K 31/02
U.S. Cl. 228—121 6 Claims

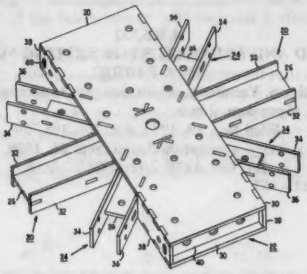
1. A method for joining a plurality of structural elements having tabs and slots thereon to form a structural member comprising the steps of:

(a) coating each element with an electoless nickel plating;

(b) coating said nickel plating with a wetting coat selected from a group of electroless coatings consisting of tin and gold;

(c) flowing molten solder over said wetting coat while said element is suspended in an acidified ethylene glycol solution;

(d) interlocking said elements together with the tabs of one element engaged in mating slots of the other element to form said structural member; and



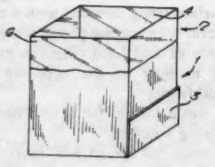
(e) heating the mating surfaces of the interlocked surfaces to reflow the solder sufficiently to obtain a structural bond.

4,365,737

CONTAINER FOR LOOSE MATERIAL

Kaarlo Marvia, Vantaa, Finland, assignor to Suomen Sokeri Osakeyhtio, Finland

Continuation of Ser. No. 711,162, Aug. 3, 1976, abandoned. This application Dec. 13, 1977, Ser. No. 860,047
Claims priority, application Finland, Aug. 5, 1975, 752220
Int. Cl.³ B65D 5/12
U.S. Cl. 229—17 R 3 Claims



1. A container for bulk goods in powder, crystalline and particulate form comprising:

(a) a rigid collapsible box having side walls, a top portion and a bottom;

(b) a hose fabricated from a flexible material, said hose having a uniform cross section approximately equal to an interior cross section of said box at said side walls, said hose having a length longer than said side walls of said box, said hose being open at opposite ends to provide an open top section and an open dumping section with a container section disposed between said top and dumping sections;

(c) said hose being disposed inside said box with said top section being positioned adjacent to said top portion of said box, said container section being juxtapositioned to at least three of said side walls of said box and against said bottom of said box, and said dumping section being folded upwardly from said bottom of said box and being juxtapositioned between said container section and a fourth side wall of said box in a sandwiched arrangement therebetween;

(d) said top section of said hose including means for permitting the bulk goods to be supplied into said container section of said hose through said top portion of said box, said means including a portion of said hose top section for folding over an upper edge of said top portion of said box when said box top portion is in an open position;

(e) said fourth side wall being provided with opening means adjacent to said box bottom for allowing said dumping

section of said hose to be pulled out therethrough when said container section is to be emptied, where said dumping section is pulled out to an outwardly extending position at a lower part of said fourth side wall adjacent to said box bottom; and

(f) said opening means including a detachable gate member disposed at said lower part of said fourth side wall, said detachable gate member having a length equal to width of said fourth side wall.

4,365,738

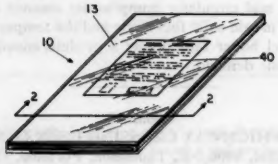
KNOCK DOWN CONTAINER PACKAGE AND METHOD OF MAKING SAME

Mark Densen, 18 Blackburn Pl., Summit, N.J. 07901

Filed Sep. 15, 1980, Ser. No. 186,906

Int. Cl.³ B65D *5/32, 65/16*

U.S. Cl. 229—23 R **3 Claims**



1. A knock down container package comprising a plurality of blanks of sheet material, each of said blanks having predetermined foldlines about which the respective blanks can be readily folded to define a component part of a body and cover of container in the assembled position of said respective blanks, each of said blanks having an outer surface and an inner surface, indicia means disposed on the inner surface of at least one of said blanks, said blanks being disposed in their respective knock-down position in superposed relationship whereby the inner surface of said blank having said indicia means is disposed inner side up on the other of said blank, and wrapping means having a see through portion enwrapping said superposed blanks whereby said see-through portion overlies said indicia means, and one of said blanks having a pair of foldlines to effect the folding of said one blank in the knock-down position so that the superposed blanks in the superposed knock-down position are substantially equal in width and length in the knock down package position.

4,365,739

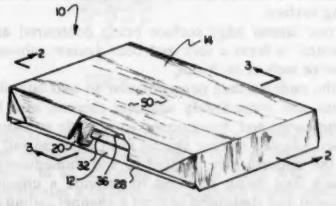
TAKE-OUT CARTON WITH LOCKING COVER

George P. Webinger, Robbinsdale, Minn., assignor to Champion International Corporation, Stamford, Conn.

Filed Oct. 6, 1980, Ser. No. 194,415

Int. Cl.³ B65D *5/32*

U.S. Cl. 229—32 **7 Claims**



1. In a food take-out carton comprising a tray and a cover for said tray:

said tray having a bottom panel and a plurality of pairs of opposed upstanding side wall panels defining a closed side wall;

at least one of said opposed upstanding side wall panels having a side wall panel flange hingedly connected thereto along its top edge and extending outwardly and downwardly;

said cover having a shape similar to that of said tray and including a top panel and a plurality of pairs of opposed outwardly and downwardly extending side closure panels each corresponding to a side wall panel of said tray and defining a closed side of said carton with its corresponding side wall panel;

at least the side closure panel associated with said one upstanding side wall panel having a closure panel flap hingedly connected to its lower edge along substantially the entire length thereof and folded back upon the inside surface of said side closure panel in face to face engagement therewith such that it engages and holds the side wall panel flange.

4,365,740

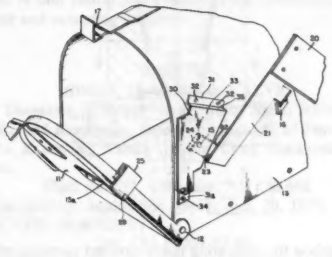
MAILBOX SIGNAL OR FLAG ASSEMBLY

John A. Whitley, 203 Randolph Ave., and Lacy A. Rowe, 1851 Skycoe Dr., both of Salem, Va. 24153

Filed Aug. 25, 1980, Ser. No. 180,887

Int. Cl.³ A47G *29/12*

U.S. Cl. 232—35 **4 Claims**



1. For use with a mailbox having a front door hinged at the lower portion thereof and comprising a body portion having sidewalls; a signal assembly comprising a signal flag having a signal standard, or support of elongated strap material bent intermediate its ends to provide a signal carrying arm, an intermediate double bend portion and an attaching arm offset from and extending at an angle to said signal carrying arm, pivot means for pivotally mounting said attaching arm portion to one side of the mailbox, said attaching arm of said signal standard including a pawl portion at one end for abutting contact with a signal latching member carried by said mailbox door, said signal latching member including a leaf spring portion extending across the front of said door and a latching portion extending at an angle to the mailbox door toward said pawl portion for cooperation with the pawl portion of the attaching arm to hold said signal carrying arm in upright position; and weather cover means for protecting the pivot means and associated mechanism from the elements comprising a box-like structure secured to the side of the mailbox and having a cover spaced from the mailbox side wall and overlying said pivot means and said attaching arm portion and open sides, said attaching arm extending through one of said open sides and swingable therein, said other side of said cover being open to permit said latching portion of said latching member to extend therethrough into abutting contact with said pawl portion of said attaching arm, said intermediate double bend portion forming a bight about said cover on said one open side to permit the attaching arm to extend into the weather cover means while the signal standard remains outside of said cover, said bight being engageable with said cover on said one open

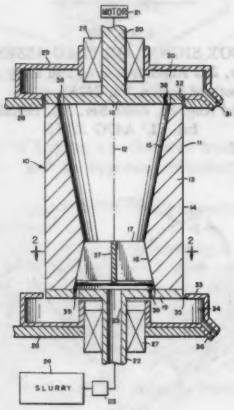
side to limit upward movement of said signal carrying arm, said pawl portion contacting said latching portion of said signal latching member when said mailbox door is closed and said signal carrying arm is raised, said latching member being yieldable upon manual manipulation of said signal carrying arm to permit said signal arm to be lowered from its raised and latched position while said door remains closed.

4,365,741

CONTINUOUS CENTRIFUGAL SEPARATION OF COAL FROM SULFUR COMPOUNDS AND MINERAL IMPURITIES

Raymond T. Greer, Ames, Iowa, and Ronald F. Gibson, Gainesville, Fla., assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Jan. 30, 1981, Ser. No. 230,013
Int. Cl.³ B04B *11/00*
U.S. Cl. 494—37 **17 Claims**



1. A method for separating finely-divided particles of similar size but different densities, comprising the steps of continuously introducing a stream of an aqueous slurry of said finely-divided particles having different densities into an inlet at the lower end of a centrifuge chamber while said chamber is rotating about a vertical axis; said chamber having upper and lower frusto-conical surfaces arranged with the apexes at the reduced ends of such frusto-conical surfaces meeting along an annular horizontal apex line disposed along a plane intermediate the upper and lower ends of said chamber; imparting rotational action to said stream as it passes through said inlet; controlling the rotational and inflow rates of said stream so that a first fraction of slurry particles having densities below a selected density will follow trajectories leading towards the frusto-conical surface above said apex line and whereas a second fraction of particles having densities greater than said selected density will follow trajectories leading to said frusto-conical surface below said apex line; and continuously withdrawing said lighter and heavier fractions from said chamber while said centrifuge is in operation.

4,365,742

HEATING SYSTEM

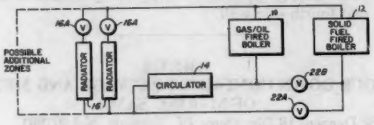
George R. Cogar, R.D. 3, Frankfort, N.Y. 13340

Filed Apr. 14, 1980, Ser. No. 139,703
Int. Cl.³ F24D *3/00*
U.S. Cl. 237—81 **7 Claims**

7. A method for heating at least one zone and for supplying domestic hot water wherein a fluid fuel burning heater and boiler assembly is coupled in parallel with a solid fuel burning heater and boiler assembly and wherein a circulator pump having an inlet and an outlet is coupled in series with said at least one zone for receiving zone return fluid, comprising:

closing first and second water valves when said fluid fuel boiler is fired, said first valve being coupled between said outlet and the solid fuel boiler and said second valve coupled between said inlet and the solid fuel boiler;

opening said first valve and closing said second valve in a



solid fuel mode upon demand for heat from said at least one zone;

closing said first valve and opening said second valve in said solid fuel mode in the absence of zone demand; and

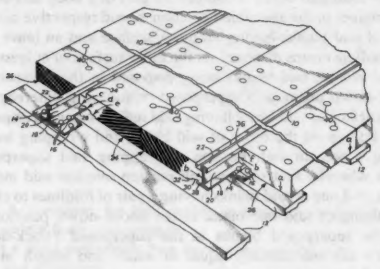
activating said circulator pump in the absence of zone demand if in said solid fuel mode and the temperature of the fluid fuel boiler falls below a predetermined value and upon zone demand.

4,365,743

RAILROAD-HIGHWAY CROSSING DECK COMPONENT

Lorn L. Trickel, 8806 NE. Thompson, Portland, Oreg. 97220, and William H. Stultz, 9424 N. Burr St., Portland, Oreg. 97203

Filed Mar. 19, 1981, Ser. No. 245,257
Int. Cl.³ E01B *2/00, 26/00;* **E01C** *9/04*
U.S. Cl. 238—8 **6 Claims**



1. For use in a highway railroad crossing including a pair of spaced rails, a plurality of rail-supporting ties, and a plurality of tie plates spiked to the ties and securing the rails thereto, each rail comprising a horizontal base, an intermediate vertical web, and a rail head; a deck component comprising:

(a) a flat pad of molded, comminuted rubber, the pad being dimensioned to lie adjacent a rail with its undersurface supported on and bearing against the ties and its upper surface lying at an elevation, substantially parallel to tread surface of the rail head, to provide a smooth, traffic-crossing surface,

(b) one lateral edge surface being contoured and dimensioned to form a foot and bear against substantially the entire web of each rail,

(c) the undersurface perpendicular to said lateral edge surface and immediately adjacent thereto, said foot being contoured and dimensioned to provide an elongated surface adapted to bear against each adjacent rail base,

(d) the undersurface parallel to and immediately adjacent each foot being recessed to provide a channel dimensioned and contoured to form a channel ceiling adapted to bear against the tie plate-spike assembly associated with the rail, thereby stabilizing the deck,

(e) the upper surface perpendicular to and immediately adjacent said lateral edge surface being recessed to pro-

vide a channel dimensioned and contoured to receive the rail head, and when positioned between the rails to receive also wheel flanges, and

(f) securing means for attaching the pad to the ties.

4,365,744

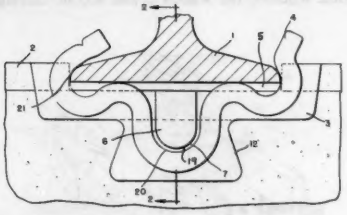
ANCHOR LOCK FASTENING ASSEMBLY

Hans-Heiner Moehren, 514 Holly Rd., Yeadon, Pa. 19050

Filed Sep. 19, 1980, Ser. No. 188,866

Int. Cl.³ E01B *9/48, 9/64, 13/02*

U.S. Cl. 238—323 **19 Claims**



1. A substantially load free anchor lock fastening assembly which comprises an anchor lock and a rail anchor,

said anchor lock forming part of a plate or attachment to a tie or rail support, and containing an engaging and locking portion for providing a loose connection with the rail anchor, and

said rail anchor being unitary and containing portions adapted to engage with the base of a rail and loosely engage the anchor lock so as to enable the rail anchor to control both the vertical and the longitudinal positions of the rail without exerting compressive forces between the rail and the rail support, said substantially load free fastening of the rail leaving the rail free to float.

4,365,745

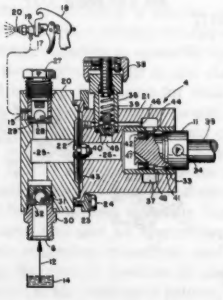
DIAPHRAGM PUMP

Louis Beck, 6399 Crossview Rd., Seven Hills, Ohio 44131

Filed Feb. 5, 1981, Ser. No. 231,746

Int. Cl.³ B05B *9/03*

U.S. Cl. 239—124 **3 Claims**



1. An airless spray system comprising a hydraulically actuated pump of the piston-diaphragm type in which a piston reciprocating in an actuating chamber filled with actuating liquid reciprocates a flexible diaphragm to pump liquid to be sprayed out of a pumping chamber through an outlet check valve and to draw in liquid from a supply source into said pumping chamber through an inlet check valve; an airless spray gun having a flexible hose connected to the pump outlet, said hose having a volumetric capacity many times larger than the displacement of said piston and being resiliently expansible and contractible to constitute a pressure storage vessel to receive an excess of liquid during the pressure stroke of said piston and diaphragm to maintain a substantially constant rate of discharge of liquid from said spray gun during the pressure and return strokes of said diaphragm and piston, said actuating chamber having a restricted pressure control valve which when open provides a restricted orifice to bleed actuating liquid into an actuating liquid reservoir when the liquid pressure in said pumping chamber and actuating chamber exceeds that for which said pressure control valve has been set and prior to the time that said piston reaches the end of its pressure stroke, said valve when open providing for completion of the pressure stroke of said piston without substantial drop in pressure in said chambers so that during a succeeding return stroke return movement of said diaphragm is arrested by a stop wall of said actuating chamber prior to the completion of the return stroke of said piston, said actuating chamber having an inlet-outlet valve which opens in response to a partial vacuum in said actuating chamber during the terminal portion of the return stroke of said piston for flow of actuating liquid from said reservoir into said actuating chamber and which remains open during the initial portion of the pressure stroke of the piston to expel actuating liquid from said actuating chamber into said reservoir; said inlet-outlet valve comprising a packing ring slidably sealed in a cylinder in said actuating chamber and on a reduced diameter extension of said piston to provide a lost motion connection between positions closing and opening passages in said piston and cylinder intercommunicating said reservoir and actuating chamber.

4,365,746

SWIRL INJECTION VALVE

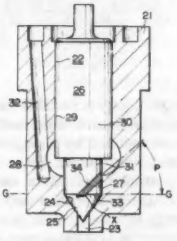
Yasusi Tanasawa, Nagoya; Norio Muto, Aichi; Akinori Saito, and Kiyomi Kawamura, both of Nagoya, all of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi, Japan

Filed Jun. 11, 1980, Ser. No. 158,460

Claims priority, application Japan, Jun. 20, 1979, 54-77665; Jun. 20, 1979, 54-84303[U]

Int. Cl.³ F02M *61/06*

U.S. Cl. 239—125 **33 Claims**



1. A swirl injection valve comprising:

a nozzle body comprising a hollow cylindrical body having a bore and a bottom portion on which a nozzle port and a valve seat are formed;

a needle valve member, slidably inserted and reciprocally moved within said bore of said nozzle body, having a cylindrical surface of axially constant radius and a tip portion for seating on said valve seat and controlling opening and closing of said nozzle port;

a swirl chamber formed upstream of said nozzle port and defined between an inner wall of said nozzle body and an outer wall of said needle valve member;

a fuel supply passage formed within said nozzle body and connected to a fuel supply source; and

inclined passage means wherein said inclined passage means

further comprises at least one short passage connected to said swirl chamber and said fuel supply passage and tangentially opened to said swirl chamber at a predetermined inclined angle, said at least one short passage being provided substantially exclusively on said cylindrical surface of axially constant radius and being extended, when projected on a plane normal to the center axis of said needle valve member, within the range of 0 to 180 degrees with respect to the center angle about the center axis of said needle valve member, such that when said needle valve member is moved from a seated position of said valve in an opening direction fuel from said fuel supply passage is tangentially supplied to said swirl chamber from said inclined passage means and a swirling flow of the fuel is formed within said swirl chamber, so that the swirling flow of the fuel is injected from said nozzle port.

4,365,747

ELECTROMAGNETICALLY ACTUATABLE FUEL INJECTION VALVE

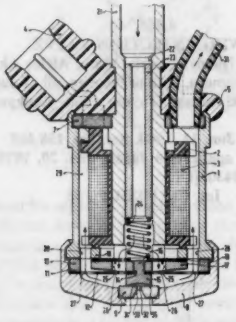
Heinrich Knapp, Leonberg; Rudolf Sauer, Benningen; Waldemar Hans, Bamberg; Mathias Linssen, Schesslitz; Jürgen Peczkowski, Bamberg, and Rudolf Krauss, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 11, 1980, Ser. No. 167,623

Claims priority, application Fed. Rep. of Germany, Sep. 8, 1979, 2936425

Int. Cl.³ F02M *51/08*

U.S. Cl. 239—125 **22 Claims**



1. An electromagnetically actuatable fuel injection valve for fuel injection systems of internal combustion engines including a housing, a core surrounded by a magnetic coil, a flat armature having opposed sides guided by at least one diaphragm means having a portion received in said housing, said flat armature firmly connected with a movable valve element disposed in proximity to a fixed valve seat and means for feeding fuel under pressure to said valve seat, characterized in that said at least one diaphragm means further includes plural means defining openings to a fuel discharge duct in said housing for emission of fuel from said housing in excess of said fuel metered through said valve seat.

4,365,748

SELF-DRIVEN MOBILE CENTER PIVOT IRRIGATION SYSTEM

Robert R. Emrich, Box J, Indianola, Nebr. 69034

Filed Sep. 26, 1980, Ser. No. 191,173

Int. Cl.³ B05B *3/12*

U.S. Cl. 239—177 **5 Claims**

1. A mobile, operably and transportably self-propelled center pivot irrigation unit comprising:

a self-driven first carriage including a plurality of ground wheels;

an operator support station on said self-driven first carriage;

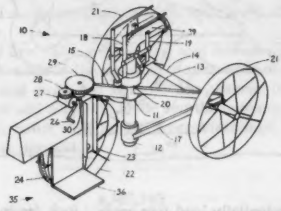
operator controlled steering means on said first carriage at said operator station for steerably moving at least one of said ground wheels;

an irrigation pipeline pivotally connected to said first carriage;

irrigation water dispensing means in fluid communication with said irrigation pipeline and mounted thereon;

a second wheel mounted carriage operably supporting said irrigation pipeline;

means for changing the direction of travel of said second wheel mounted carriage with respect to said irrigation pipeline whereby the wheels of said second carriage may



be positioned to travel parallel to the axis of said irrigation pipeline and whereby the wheels of said second carriage may also be positioned to travel perpendicular to the axis of said irrigation pipeline;

means for connecting said irrigation pipeline to an irrigation water source;

a disengageable first drive means operably mounted on said irrigation unit for propelling said second carriage in a circular path about said carriage; and

said first carriage including a second drive means fixedly mounted on said irrigation unit for drivingly rotating at least one of said ground wheels to propel said unit in a linear direction of travel.

4,365,749

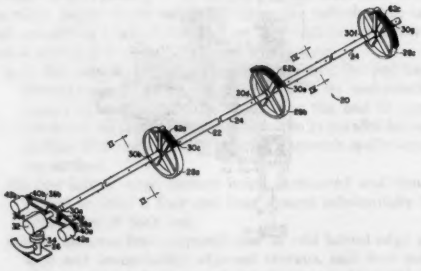
CENTER-PIVOT IRRIGATOR

Franklin D. Bowen, Rte. #2, Box 104, Terrell, Tex. 75160

Continuation of Ser. No. 114,042, Jan. 17, 1980, abandoned. This application Feb. 12, 1981, Ser. No. 233,828

Int. Cl.³ B05B *3/12*

U.S. Cl. 239—177 **10 Claims**



1. A method of sprinkler irrigating the ground of a field about a center pivot, comprising:

(a) horizontally rotating an elongate irrigation pipe by applying torque from said center pivot to said pipe;

(b) intermittently connecting to said pipe each respective wheel of a plurality of support wheels mounted along the length of said pipe, said wheels being freely rotatable about said pipe when not connected thereto;

(c) intermittently rolling each said wheel along the ground a respective designated distance through revolutions of said pipe to thereby arcuately move said pipe about said pivot point with the entire structure of said pipe being effectively maintained in elongated posture;

(d) pumping water under pressure into said irrigation pipe; and

(e) sprinkling water in substantially even distribution along the length of said pipe from a plurality of sprinklers disposed along said pipe and rotating with said pipe.

4,365,750

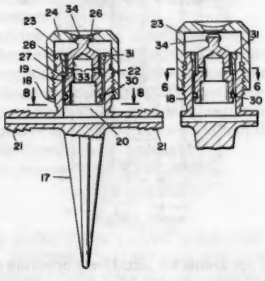
ADJUSTABLE SPRINKLER SYSTEM

David Carlberg, Los Altos, Calif., assignor to Engineering Systems Corporation, Santa Clara, Calif.

Continuation-in-part of Ser. No. 110,653, Jan. 9, 1980, abandoned. This application Dec. 24, 1980, Ser. No. 219,847

Int. Cl.³ B05B *1/12*

U.S. Cl. 239—276 **1 Claim**



1. A sprinkler device, including a tapered base member adapted to be inserted in earth, a housing secured superjacently to said base member and including an upwardly opening chamber therein, means for supplying water to said chamber, a cap disposed about said housing, first means for securing said cap to said housing in selectively variable height relationship thereto, a jet aperture in an upper end of said cap, an arbor rotatably disposed in said chamber, second means for selectively varying the rate of flow of water from said housing through said upwardly opening chamber and through said jet aperture, a tapered head extending upwardly from said arbor and adapted to extend into said jet aperture to control the water spray pattern emanating therefrom, said first means selectively varying the vertical position of said head with respect to said aperture to vary said spray pattern, said first and second means functioning mutually independently, said second means including a bushing secured in said chamber and disposed about said arbor, and said bushing including an interior annular surface having a plurality of longitudinally extending slots of increased radius, said arbor having a plurality of radial flow passages extending therethrough and positioned for variable registration with said slots, said arbor being rotatable to position said flow passages with respect to said longitudinally extending slots.

4,365,751

TRIGGER TYPE LIQUID INJECTOR

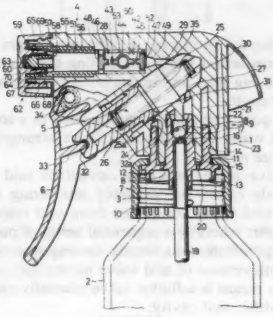
Tadao Saito, and Takaharu Tasaki, both of Tokyo, Japan, assignors to Yoshino Kogyosho Co., Ltd., Tokyo, Japan

Filed Dec. 24, 1980, Ser. No. 220,073

Claims priority, application Japan, Sep. 26, 1980, 55-133741; Oct. 1, 1980, 55-139800[U]; Oct. 6, 1980, 55-142537[U]; Oct. 15, 1980, 55-146519

Int. Cl.³ B05B *9/043*

U.S. Cl. 239—333 **6 Claims**



1. A trigger type liquid sprayer, comprising:

a pumping means for effecting suction of a liquid from a container, said pumping means comprising a cylindrical pump chamber, a spring and a piston member movable within said cylindrical pump chamber against the biasing force of the spring,

a trigger mechanism for effecting movement of said piston member;

a suction valve for regulating the flow of said liquid into said cylindrical pump chamber from a liquid container;

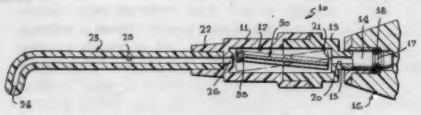
means for regulating the movement of said liquid from said cylindrical pump chamber, said means for regulating comprising a nozzle mounted on the end of a horizontally oriented injection cylinder, said injection cylinder comprising a discharge valve, a small diameter cylinder, an intermediate diameter cylinder, a large diameter cylinder, and a circular plug, said discharge valve being positioned in the intermediate diameter cylinder and including an elastic ring with first and second diametrically opposed horizontal extensions, said first horizontal extension terminating in a valve structure for regulating the flow of said liquid through said intermediate diameter cylinder from said small diameter cylinder, a discharge port being disposed in said injection cylinder opposite said nozzle, said second horizontal extension terminating in a plate structure which regulates the flow of said liquid from said intermediate diameter cylinder to said large diameter cylinder, the end of said large diameter cylinder furthest from said plate structure being fitted with said circular plug, said circular plug having orifices for allowing passage of said liquid from said large diameter cylinder to said nozzle structure;

said large diameter cylinder being lined with a hollow cylindrical member having an opening therethrough, said cylindrical member extending between said discharge valve and said circular plug.

4,365,752
WATER PULSATING UNIT FOR ORAL SYRINGE

Avery Waisbren, 5429 Santa Monica Blvd., Los Angeles, Calif. 90029, and Arthur F. Kelson, 11701 Foster, Los Alamitos, Calif. 90720

Filed May 4, 1981, Ser. No. 260,067
Int. Cl.³ B05B 1/08
U.S. Cl. 239—381 **1 Claim**

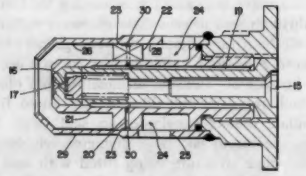


1. A device for producing a pulsating stream from a main stream of pressurized water comprising the combination of:
- a body having inlet and outlet ports on opposite sides of a central cavity;
- said inlet port adapted to be connected to a source of pressurized water and said outlet port arranged to carry a discharge nozzle;
- rotary valve means movably carried on said body within said body cavity for yieldably interfering with flow of pressurized water conducted from said inlet port to said outlet port whereby a sequential series of pulsating water discharges from said nozzle in response to oscillatory rotary movement of said valve means;
- said valve means is a flutter valve pivotally carried on said body within said cavity;
- said flutter valve comprises an elongated member having pivots outwardly projecting in a lateral direction approximately mid-way between its opposite ends;
- said flutter valve member has movable opposite ends terminating in equally close proximity to said inlet and said outlet ports respectively;
- a weight carried on said valve member end in close proximity to said outlet port;
- said valve member is pivoted in response to the main fluid stream pressure whereby the main fluid stream pressure alternately strikes against one side and then the other side of said valve member at its end opposite to said end carrying said weight; and
- said valve member further includes a pair of spaced apart ribs carried on the opposite sides thereof respectively.

4,365,753
BOUNDARY LAYER PREFILMER AIRBLAST NOZZLE

Curtis F. Harding, Parma, and Harold C. Simmons, Richmond Heights, both of Ohio, assignors to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Aug. 22, 1980, Ser. No. 180,284
Int. Cl.³ B05B 7/10
U.S. Cl. 239—404 **6 Claims**

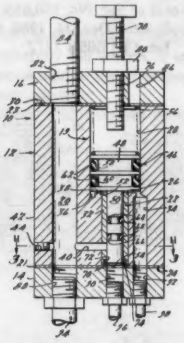


1. A fuel nozzle comprising an air shroud having a smooth cylindrical inner peripheral surface, a member within said air shroud and cooperating with said inner peripheral surface to define an air shroud annulus, a fuel source within said member, means for conveying fuel from said fuel source to said inner peripheral surface and for evenly distributing a film of fuel on said inner peripheral surface, said means including a totally enclosed passage extending from said fuel source radially outwardly and terminating at said inner peripheral surface, a swirler vane disposed within said air shroud annulus and arranged at a predetermined angle relative to the longitudinal direction, and said passage includes a passage portion extending radially through said swirler vane and terminating at another passage portion cooperatively defined by said swirler vane and said inner peripheral surface.

4,365,754
SPRAY ASSEMBLY CONSTRUCTION

Walter E. Levine, and Allan B. Heath, both of Port Huron, Mich., assignors to Acheson Industries, Inc., Port Huron, Mich.

Filed Jun. 19, 1980, Ser. No. 161,060
Int. Cl.³ B05B 7/12
U.S. Cl. 239—412 **19 Claims**

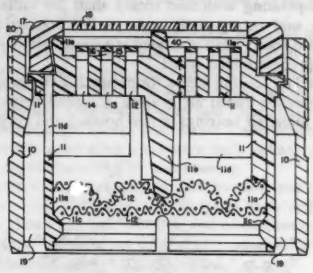


1. In a spray apparatus for selectively applying one or more fluid to the working surfaces of forming apparatus, improved valve means for controlling the flow of said one or more fluids comprising:
- a main body housing;
- a first elongated fluid passageway extending substantially linearly through said main body housing and having an inlet at one end and an outlet at the other end;
- a second fluid passageway spaced from said first passage extending into said housing and having an inlet at one end thereof;
- a substantially unrestricted connecting passage having one end opening into said first fluid passage intermediate the ends thereof and the other end opening into said second fluid passage;
- valve means disposed within said second fluid passage and movable into and out of overlying relationship to said port so as to selectively control fluid flow from said second fluid passage to said first fluid passage via said connecting passage; and
- actuating means for selectively moving said valve means out of overlying relationship, said actuating means being operable independently of fluid flow through said first fluid passageway whereby said fluid flow through said first passage may continue after movement of said valve member into overlying relationship to said port thereby enabling said fluid flow to evacuate said connecting passage.

4,365,755
AERATOR WITH REDUCED NOISE

Elie P. Aghnides, 2 E. 61st St., New York, N.Y. 10021

Filed Dec. 30, 1980, Ser. No. 221,475
Int. Cl.[3] E03C *1/08*
U.S. Cl. 239—428.5 9 Claims



1. In a faucet aerator of the type which employs an upstream disc having a multiplicity of chambers therein, the longitudinal dimensions of which chamber being parallel with the general direction of water flow, each chamber having a plurality of opposing entrance openings at the upstream end of the chamber, and screen means downstream of the chambers for mixing the water with air and discharging the water as a coherent jet containing numerous small bubbles, said aerator defining an air passage means extending from the atmosphere to the space between the chambers and the screen means,

the improvement comprising:

said disc having at least 36 of said chambers,

said chambers each having a length of at least 0.75 mm, and a cross-sectional area less than 0.8 mm^2, and

each said chamber having at least two entrance openings, the aggregate cross-section of which entrance openings is about equal or exceeds the cross-section of the chamber to which the openings communicate,

whereby to provide a low-noise aerator.

4,365,756
FUEL INJECTION VALVE ASSEMBLY FOR RECIPROCATING GAS ENGINE

Timothy Z. Fisher, 16222 Tibet Rd., Friendswood, Tex. 77546

Filed Aug. 11, 1980, Ser. No. 176,980
Int. Cl.[3] B05B *1/30*
U.S. Cl. 239—533.2 33 Claims

1. A fuel injection valve assembly for use in a reciprocating gas engine, comprising:

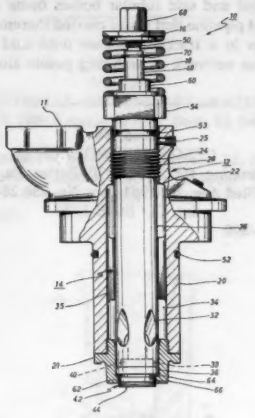
(a) a valve cage adapted for mounting on the body of the engine by insertion of a cylindrical lower portion thereof into an opening in the engine body leading to a combustion chamber of the engine, said valve cage having a cartridge-receiving bore with threads at the end of the bore nearer the outside of the engine;

(b) a valve cartridge having

(1) a stem housing with outside threads engaging the threads of the cartridge-receiving bore, a valve seat at the end opposite the outside threads, and at least one fuel seat port between the outside threads and the valve seat, the port being adapted for the flow of fuel from an annular space, between inside wall of said valve cage and the outside of said valve cartridge, to a combustion chamber of the engine,

(2) a valve with a substantially frustoconical element, the surface of which having a valve face adapted to fit tightly against the face of the valve seat, a valve stem attached to the frustoconical element and passing through the stem housing, the stem threads at the opposite end of the valve stem from the frustoconcial element;

(c) a keeper ring threadably engaged with the stem threads of the valve; and

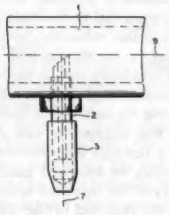


(d) an external spring between said keeper ring and said valve cage, said external spring biasing the valve in the closed position.

4,365,757
WATER FEEDING HEAD

Dobos Alajos; Gyula Kiss; Bela Gaspar; Geza Imre; Julia Jony nee Acs; Istvan Forian; Istvan Ijjas; Ferenc Liptak, and Vilma Bisits nee Zsilinszky, all of Budapest, Hungary, assignors to Agrober Mezogazdasagi es Elelmiszeripari Tervezo, Beruhazasi Vallalat, Budapest, Hungary

Continuation of Ser. No. 85,796, Oct. 17, 1979, abandoned. This application May 20, 1981, Ser. No. 265,560
Int. Cl.[3] B05B *1/18*
U.S. Cl. 239—567 3 Claims



1. A drop-feed irrigation system for row crop watering comprising:

at least one pipeline spaced above the ground to be watered and for delivering water at a pressure of no more than 0.75 m water column and provided with a plurality of tubular bodies spaced along said pipeline and extending downwardly therefrom, each of said tubular bodies having a tapering configuration; and

respective one-piece nozzles interchangeably mounted on said tubular bodies, each of said nozzles being formed with a cylindrical portion having a bore open at one end for receiving said respective tubular body and communicating therethrough with said pipeline, said nozzle being further formed with a plurality of orifices, each having a diameter greater than 0.6 mm and formed at the other end of said nozzle and communicating with said bore, at least two of said orifices being directed laterally and substan-

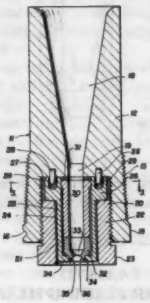
tially radially with respect to the axis of said nozzle, said orifices being axially spaced from the lower end of the respective tubular body, said orifices of said nozzle being so oriented and said tubular bodies being so positioned along said pipeline that water carried therein is discharged therefrom in a trickling stream onto said ground at a continuous network of watering points along said pipeline.

4,365,758

DESCALING NOZZLE

Edward J. Schaming, P.O. Box 1070, Butler, Pa. 16001

Filed Apr. 28, 1981, Ser. No. 258,284
Int. Cl.³ B05B *1/20*
U.S. Cl. 239—590 **7 Claims**



1. A descaling nozzle comprising a threaded body for placement in a threaded opening of a pressurized fluid header, the screw-threads of said body being near the forward end of the body and the body being elongated and extending substantially rearwardly of the screw-threads, whereby the body can extend deeply into the interior of a header, the body having a rear forwardly tapering venturi entrance passage for fluid, a restricted throat forwardly of the entrance passage and an enlarged forward threaded recess forwardly of said throat, the body having a permanent indicator element on the exterior thereof near its forward end to facilitate precise angular alignment of the nozzle orifice when the descaling nozzle is assembled with a header, a nozzle tip unit disposed within said threaded recess of said body and including a nozzle tip having a spray orifice, precision angle locator means for said orifice on said body and nozzle tip unit, and a threaded retaining sleeve for the nozzle tip unit engaged in said threaded recess of the body and having a through bore receiving said tip unit, and said tip unit including an enlarged head within the threaded recess and inwardly of the threaded retaining sleeve and being clamped between the rear end of the retaining sleeve and the opposing end wall of the threaded recess.

4,365,759

ROTARY TYPE ELECTROSTATIC SPRAY PAINTING DEVICE

Teru Morishita, Shizuoka; Matsuyoshi Sugiyama, Susono, and Toshikazu Suzuki, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Oct. 10, 1980, Ser. No. 195,792
Claims priority, application Japan, May 21, 1980, 55-66366
Int. Cl.³ B05B *5/04*; F16C *7/04, 17/10*
U.S. Cl. 239—703 **15 Claims**

1. A rotary type electrostatic spray painting device comprising:

a metallic housing;

a metallic rotary shaft rotatably arranged in said housing and having a front end and a rear end;

a cup shaped metallic spray head fixed onto the front end of said rotary shaft and having a cup shaped inner wall;

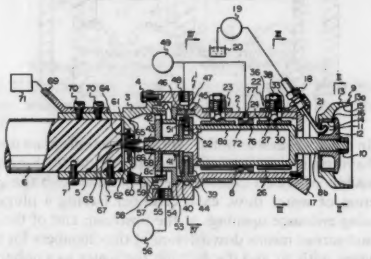
feeding means for feeding a paint onto said cup shaped inner wall;

drive means cooperating with said rotary shaft for rotating said rotary shaft;

a pair of spaced radial air bearings arranged in said housing and cooperating with said rotary shaft for radially supporting said rotary shaft under a non-contacting state when said rotary shaft is rotated at a speed which is higher than a predetermined speed;

compressed air feeding means for producing compressed air;

a static pressure radial air bearing arranged between said spaced radial air bearings in said housing and cooperating



with said rotary shaft, said static pressure radial air bearing being connected to said compressed air feeding means and feeding the compressed air into a clearance between said static pressure radial air bearing and said rotary shaft for radially supporting said rotary shaft under a non-contacting state when said rotary shaft is rotated at a speed which is lower than the predetermined speed;

non-contact type thrust bearing means arranged in said housing and cooperating with said rotary shaft for axially supporting said rotary shaft under a non-contacting state;

a generator generating a negative high voltage and having an output connected to said housing,

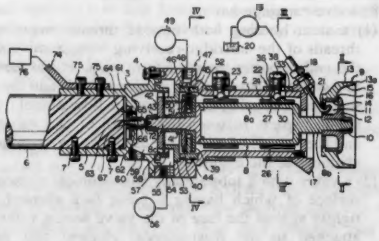
electrode means arranged in said housing and electrically connecting said output to said spray head.

4,365,760

ROTARY TYPE ELECTROSTATIC SPRAY PAINTING DEVICE

Matsuyoshi Sugiyama, Susono; Teru Morishita, Shizuoka, and Toshikazu Suzuki, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Oct. 23, 1980, Ser. No. 200,025
Claims priority, application Japan, May 23, 1980, 55-67912
Int. Cl.³ B05B *5/04*
U.S. Cl. 239—703 **20 Claims**



1. A rotary type electrostatic spray painting device comprising:

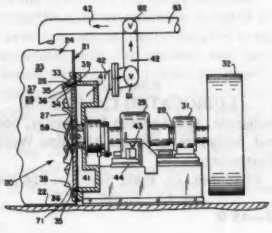
a metallic housing;
a metallic rotary shaft rotatably arranged in said housing and having a front end and a rear end;
a cup shaped metallic spray head fixed onto the front end of said rotary shaft and having a cup shaped inner wall;
feeding means for feeding a paint onto said cup shaped inner wall;
drive means cooperating with said rotary shaft for rotating said rotary shaft;
non-contact type radial bearing means arranged in said housing and cooperating with said rotary shaft for radially supporting said rotary shaft under a non-contacting state;
non-contact type thrust bearing means arranged in said housing and cooperating with said rotary shaft for axially supporting said rotary shaft under a non-contacting state;
a generator generating a negative high voltage and having an output connected to said housing;
electrode means arranged in said housing and electrically connecting said output to said spray head, and;
a slide plate fixed onto the rear end of said rotary shaft and having a rear face and a front face which is in continuous contact with said electrode means.

4,365,761

APPARATUS AND METHOD FOR DEFIBERING UNCONVENTIONAL MATERIAL

Donald W. Danforth, Andover, Mass., assignor to Bolton - Emerson, Inc., Lawrence, Mass.

Filed Mar. 6, 1980, Ser. No. 127,873
Int. Cl.³ B02C *23/36*
U.S. Cl. 241—21 **16 Claims**



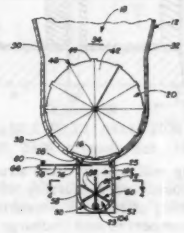
1. A vortical circulation pulper comprising:
a stock container having a bottom wall and a side wall;
a bladed and channeled stator in one of said walls and a vaned, vortical-circulation rotor, rotatable within said stator to vortically circulate stock in said container;
said stator having a truncated conical, bladed and channeled underface, a smaller open end facing into said container and a larger open end facing away from said container;
said stator being shaped in an annular, symmetrical, pattern of alternate triangular, peaks and valleys, each peak having a stock reduction, acquisition edge;
vortical circulation vanes on said rotor, each having an outer stock reduction bladed edge thereon, extending from an outer tip to a high point thereon said edges jointly outlining a truncated conical, bladed outer face;
the truncated conical, bladed and channeled underface of said stator and the truncated conical bladed outer face of said rotor forming a truncated-conical stock reduction interface;
said rotor vanes having spaces therebetween and said stator valleys constituting acquisition spaces, for receiving large chunks of said stock;
and the outer, stock reduction bladed edges of said rotor vanes cooperating with the stock reduction acquisition edges of the peaks of said stator at a predetermined acquisition angle to successively impart a scissors-like impact to said chunks received in said acquisition spaces to progressively reduce the size thereof for entering said stock reduction interface.

4,365,762

MATERIAL MOVING APPARATUS

Tom C. Hoshall, 1001 Enterprise Ave., Suite 13, Oklahoma City, Okla. 73128

Continuation-in-part of Ser. No. 29,642, Apr. 13, 1979, Pat. No. 4,273,296. This application Jun. 11, 1981. Ser. No. 272,663
Int. Cl.³ B02C *13/288*
U.S. Cl. 241—60 **6 Claims**



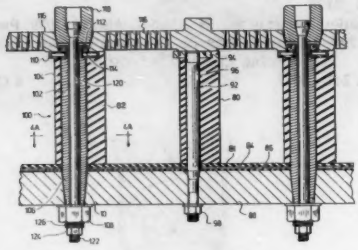
1. A material moving apparatus, comprising:
a hopper having an upper end and a lower end, a material receiving opening being formed in the upper end, the hopper having a chamber and a material discharge opening, material being dischargeable into the chamber through the material receiving opening and the material being movable from the chamber through the material discharge opening, the lower end portion of the hopper being formed on a radius;
a hopper blade assembly disposed in the hopper chamber for shredding the material discharged into the hopper chamber, the hopper blade assembly cooperating to shred the material and cooperating to move the material from the hopper chamber through the material discharge opening, comprising:
a shaft rotatably mounted and extending through a portion of the hopper chamber;
at least two blades, each blade being connected to the shaft and extending a distance radially therefrom terminating with an outermost end; and
means to rotatingly drive the shaft, thereby rotating the blades within the hopper chamber, the lower end portion of the hopper being formed on the radius and shaped to provide a minimum clearance between the outermost ends of the blades of the hopper blade assembly and the lower end portion of the hopper;
a blower assembly receiving the material discharged through the hopper material discharge opening and forcibly discharging the received material through a blower discharge, the blower assembly comprising:
an air lock having an inlet chamber communicating with the hopper material discharge opening; an outlet chamber wherein the blower discharge is formed; and means, forming a substantially hermetic seal between the inlet and outlet chambers of the air lock, for transferring material received in the inlet chamber to the outlet chamber; and
means for injecting air into the outlet chamber of the airlock; and;
a discharge conduit connected to the blower discharge and receiving the material discharged from the material discharge opening, the material being discharged from the material moving apparatus via the discharge conduit.

4,365,763

DISCHARGE ZONE FASTENING ASSEMBLY FOR GRINDING MILL

Rhual L. Guerguerian, La Salle, Canada, assignor to Dominion Engineering Works Limited, Lachine, Canada

Filed Sep. 22, 1980, Ser. No. 189,173
Claims priority, application Canada, Oct. 26, 1979, 338548
Int. Cl.³ B02C 17/18
U.S. Cl. 241—70 21 Claims



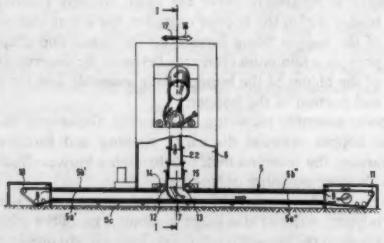
1. In a grinding mill hollow drum structure having a discharge head portion, and a plurality of discharge channel members, a fastening assembly for securing each of said discharge channel members to said discharge head portion, comprising at least one rigid cantilever post means having a body portion and a securing stem portion that adjoins the body portion at one end thereof, said securing stem portion being mechanically releasably secured in fixed relation to said discharge head portion independently of said channel members whereby said body portion of each said posts provides a transverse cantilevered load bearing capability for supporting one of said discharge channel members.

4,365,764

SUCTION APPARATUS FOR REMOVING FIBER MATERIAL

Hans-Jürgen Marx, Monchen-Gladbach, Fed. Rep. of Germany, assignor to Trützschler GmbH & Co. KG, Monchen-Gladbach, Fed. Rep. of Germany

Filed Aug. 29, 1980, Ser. No. 182,603
Claims priority, application Fed. Rep. of Germany, Nov. 7, 1979, 2944889
Int. Cl.³ B65G 53/26, 53/52
U.S. Cl. 241—101 A 4 Claims



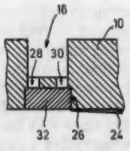
1. In a fiber bale opener including a truck arranged for back-and-forth displacement along a travelling path, an opening mechanism carried by said truck and arranged for removing fiber from the top of fiber bales positioned along said travelling path and a suction apparatus for carrying away, by an air stream, fiber removed from the bales by the opening mechanism, said suction apparatus including a suction duct having a length extending in the direction of said travelling path and a throughgoing slot on one side thereof, extending parallel to said length, said suction apparatus further having a flexible cover belt extending over said slot for sealing the inside of said duct from the environment, said cover belt defining an interstice within said truck; said interstice travelling with said truck and providing a passage for the fiber from said opening mechanism to the inside of said suction duct; the improvement wherein said cover belt has first and second ends stationarily held at opposite ends of said travelling path; said suction apparatus having first, second, third and fourth belt deflecting means; said first and second belt deflecting means being carried by said truck and being situated from one another at a distance determining a length dimension of said interstice; said third and fourth belt deflecting means being supported at opposite ends of said travelling path adjacent the respective said first and second ends of said cover belt; said cover belt extending from said first end thereof to said first deflecting means and being trained thereabout; said cover belt extending from said first deflecting means to said third deflecting means and being trained thereabout; said cover belt extending from said third deflecting means to said fourth deflecting means and being trained thereabout; said cover belt extending from said fourth deflecting means to said second deflecting means and being trained thereabout; said cover belt extending from said second deflecting means to said second end; said cover belt extending in two superposed layers between said first end and said first deflecting means and between said second end and said second deflecting means.

4,365,765

LUBRICATED CAM DRUM

Ruedi Schneeberger, and Andreas Schwander, both of Seuzach, Switzerland, assignors to Rieter Machine Works, Ltd., Winterthur, Switzerland

Filed Jan. 22, 1980, Ser. No. 114,206
Int. Cl.³ B65H 54/28
U.S. Cl. 242—43 R 19 Claims

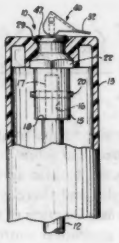


1. A traverse cam drum for a winding machine thread traversing mechanism comprising said drum and a thread guide member having a slider portion which co-operates with an external groove in the drum so that the thread guide member is reciprocated longitudinally of the cam drum during rotation of the latter about its axis, said drum comprising a closable space within the drum adapted to contain a supply of lubricant in use, a passage communicating said space with said groove such that centrifugal force acting on lubricant in said space in use will tend to force it along said passage to the groove, and a porous body in an inner portion of the passage with said body being spaced from said groove to avoid contact with said slider portion, the pores of the body providing through-flow channels which permit a limited flow of a given lubricant to pass through the passage to the groove at a given rotational speed of the drum.

4,365,766
BOBBIN LOCKING DEVICE

Jerry R. Boyd, Washington, N.C., assignor to Washington Instrument, Inc., Washington, N.C.

Filed Aug. 4, 1980, Ser. No. 174,879
Int. Cl.[3] B65H 54/54
U.S. Cl. 242—46.2 20 Claims

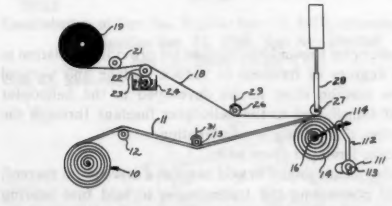


1. In a roving machine of the type including a plurality of bobbins which are rotatable at relatively high speeds to wind thread thereon, the improved bobbin drive comprising:
(a) a spindle member;
(b) a bobbin member; and
(c) a member interconnecting assembly comprising:
(i) a body drivingly connected to one of the members and having torque transmitting surfaces located relative to and coactable with complemental surfaces on the other of the members to transfer torque transmitting forces between the body and the other member;
(ii) a deformable retainer movably coupled to said body;
(iii) an overcenter cam movably coupled to said body and being coactable with the retainer and having retainer compression and retainer release positions; and,
(iv) the retainer when the cam is in its compression position being deformed into a lock producing position securing the body and the other member in torque transmitting relationship, with a force which includes an axial vector urging the members together, when the cam is in its release position being in an uncompressed condition to permit removal of the bobbin from the spindle.

4,365,767
APPARATUS FOR LAMINATING AND COILING INSULATION BLANKETS

Floyd D. Benthimere, c/o Heleron Corporation, 9055 Freeway Dr., Macedonia, Ohio 44056

Filed Feb. 2, 1981, Ser. No. 230,533
Int. Cl.[3] B65H 17/02, 23/10
U.S. Cl. 242—67.1 R 15 Claims

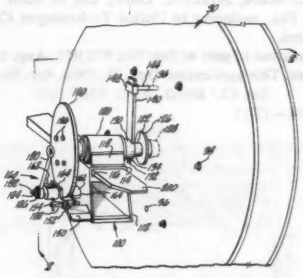


1. A tensioning and compression apparatus for use in the production of rolls of faced insulation blankets, comprising a frame, a powered roll journaled on said frame for rotation about a first axis and around which a blanket is coiled, a tension and compression roll supported on said frame for movement toward and away from said powered roll and journaled for rotation about a second axis substantially parallel to said first axis, a piston and cylinder actuator mounted on said frame and connected to said tension and compression roll operable to apply a force to said tension and compression roll as a blanket is being coiled on said powered roll, said actuator producing a controlled force of engagement between said tension and compression roll and the outer surface of the blanket being coiled on said powered roll, and pressure control means connected to supply a separately controlled positive pressure to each of the two ends of said cylinder, said force of engagement being a function of the relationship between the positive pressures being applied to said cylinder ends.

4,365,768
CABLE REEL ADAPTER

Harold F. Woodruff, 2340 Avocado Ter., Hacienda Heights, Calif. 91745

Filed Mar. 12, 1981, Ser. No. 242,726
Int. Cl.[3] B65H 75/40, 57/38
U.S. Cl. 242—86.7 7 Claims



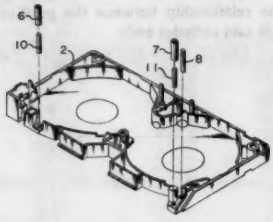
1. An apparatus for supporting a reel having material wound thereabout to facilitate rotation of the reel for dispensing of the material, the apparatus comprising;
(a) two reel support assemblies, one for supporting each end of the reel, each reel support assembly comprising;
(i) a support member,
(ii) a bearing retaining unit integral with the support member;
(iii) an axle rotatably supported by the bearing retaining unit in a substantially horizontal position with respect to the ground;
(iv) a spindle mounted upon the axle and adapted to receive the reel; and
(b) a braking assembly comprising;
(i) a braking disk affixed to the axle of one of the reel support assemblies,
(ii) a caliper assembly adapted to produce a braking force upon the braking disk to occasion controlled rotation of said axle having the disk affixed thereto;
(iii) a braker arm connected to said axle having the disk affixed thereto, the braker arm having means operative therewith for engaging the reel, whereby the braker arm selectively imparts a torque opposite the direction of rotation of the reel to brake the reel,
wherein each support member includes means for receiving the forks of a forklift truck.

4,365,769

MAGNETIC TAPE CASSETTE

Shigemasa Shoji, Tokyo, Japan, assignor to TDK Electronic Co., Ltd., Tokyo, Japan

Filed Dec. 3, 1980, Ser. No. 212,614
Claims priority, application Japan, Jan. 14, 1980, 55-3246[U]
Int. Cl.[3] B65H 27/00; G03B 1/04
U.S. Cl. 242—199 1 Claim



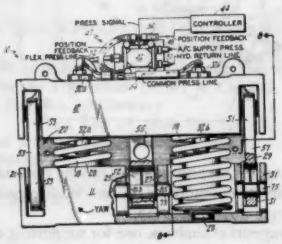
1. A magnetic tape cassette which comprises a tape guide coated with nickel-tin alloy plating on the surface in slide contact with a magnetic tape.

4,365,770

FIXED POSITION VARIABLE FREQUENCY PENDULAR-TYPE VIBRATION ABSORBER

Kenneth C. Mard, Stratford, Conn., and S. John Washburn, Jupiter, Fla., assignors to United Technologies Corp., Hartford, Conn.

Continuation-in-part of Ser. No. 931,084, Aug. 4, 1978, abandoned. This application Oct. 29, 1980, Ser. No. 201,864
Int. Cl.[3] B64D 47/00; F16F 9/02
U.S. Cl. 244—17.11 20 Claims



1. A variable frequency vibration absorber adapted to be fixedly attached to a vibration prone system to cooperate with the principal vibration excitation source which primarily generates vibrations in a given direction so as to control system vibrations and comprising:

base means,

two mass means of selected equal mass,

pendular connecting means having a pendular arm of length "a" connecting said mass means in opposed positions to said base means for support from and allochiral, pendular motion in said given direction,

spring means operatively connected to said mass means in preloaded condition to exert a force "Fnr" on said mass means to thereby establish the natural frequency thereof and of the vibration absorber, and to also cause said mass means to move in coincident, allochiral pendular motion so that motion of said mass means produces additive forces in said given direction to absorb the vibration force established by said principal source, and so that all other forces so produced mutually cancel, said spring means also being of selected spring rate "Ks" to compensate for the spring rate reduction caused by pendular motion of the pendular connecting means and said mass means and thereby provide an essentially linear spring rate acting on said mass means for angles of pendular motion "θ" of at least $\pm 45°$, so that the natural frequency of the vibration absorber is substantially constant throughout this range of operation, and wherein "Ks" is selected according to the equation:

$$K_s = F_{nr}/a \left[\frac{\left(1 - \frac{\sin\theta}{\theta}\right)\left(\frac{\theta}{2\sin\theta}\right)}{(1 - \cos\theta)} \right]$$

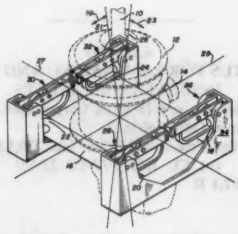
control means responsive to the frequency of the vibrations generated by the principal vibration excitation source and operatively connected to said spring means to vary the force exerted thereby and thereby the natural frequency of said mass means as a function of the vibration frequency generated by said excitation source to thereby maintain the proper relationship between the mass means natural frequency and the principal source generated frequency to control system vibration.

4,365,771

INPLANE NODALIZATION SYSTEM

Dennis R. Halwes, Arlington, Tex., assignor to Textron, Inc., Providence, R.I.

Continuation of Ser. No. 15,229, Feb. 26, 1979, abandoned. This application Mar. 23, 1981, Ser. No. 246,295
Int. Cl.[3] B64C 27/00; F16F 15/10
U.S. Cl. 244—17.27 5 Claims



1. A helicopter transmission mount for providing isolation in multiple degrees of freedom to reduce inplane and vertical vibrations existing from forces developed in the helicopter rotor and transmitted to the helicopter fuselage through the transmission, comprising in combination:

a rigid beam having a pivot axis;

first bearing means joined to said beam at a drive point thereof;

means for connecting the transmission to said first bearing means for driving said beam by the rotor induced vibrations;

second bearing means connecting the fuselage to said beam, said second bearing means coaxial with the pivot axis of said beam; and

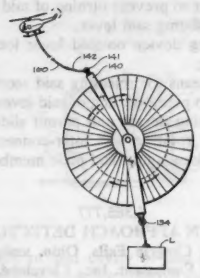
said first and second bearing means along with said rigid beam being selected to be combined to establish the pivot axis of the transmission mount at said second bearing means.

4,365,772

AIRCRAFT HAVING BUOYANT GAS BALLOON

Frederick D. Ferguson, Box No. 1151, Station B, Ottawa, Ontario, Canada

Division of Ser. No. 64,286, Aug. 6, 1979, abandoned. This application Dec. 16, 1981, Ser. No. 331,414
Int. Cl.³ B64B 1/56, 1/66
U.S. Cl. 244—33 3 Claims



1. An aircraft comprising:

a spherical non-elastic balloon for containing a buoyant gas and having essentially fixed dimensions and shape when inflated,

a rigid load supporting yoke including two arms each with an upper end suspended from said balloon at opposite sides to the centre of the balloon, said suspension means allowing rotation of the balloon relative to the load supporting yoke,

a rigid towing yoke having two arms and having a central attachment means for a tow bar or cable,

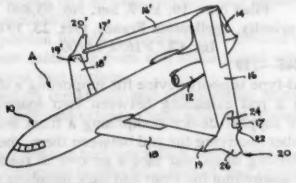
means pivotably connecting outer ends of the towing yoke arms to the upper ends of the load supporting yoke in such manner that the towing yoke can be pivoted relative to the load supporting yoke about a horizontal axis passing through the centre of the balloon from a towing position in which the towing yoke extends upwardly from its connection with the load supporting yoke, to a tethered position wherein the towing yoke extends downwardly from said connection with the load supporting yoke and allows said attachment means to be used to tether the balloon to the ground, said towing yoke being dimensioned relative to the balloon so as to be pivotable through at least 180° relative to the load supporting yoke.

4,365,773

JOINED WING AIRCRAFT

Julian Wolkovitch, 2109 Prestonwood Dr., Arlington, Tex. 76012

Continuation of Ser. No. 29,034, Apr. 11, 1979, abandoned. This application Sep. 22, 1980, Ser. No. 189,069
Int. Cl.³ B64C 39/08, 3/00
U.S. Cl. 244—45 R 5 Claims



1. An aircraft comprising:

a fuselage having an extended fin in proximity to the rearward end thereof;

a first pair of airfoils connected to said fin; and

a second pair of airfoils connected to said fuselage forward of and at a lower elevation than said first pair of airfoils, each of said first pair of airfoils is connected to a corresponding airfoil of said second pair by a streamlined element wherein the extended ends of said first pair of airfoils are in generally the same elevational plane as those corresponding portions of said second pair of airfoils which are fastened to the streamlined elements;

each airfoil has a cross-section construction for at least part of its span having four corner portions in generally a quadrilateral disposition where a first set of diagonally opposing corner portions is strengthened to resist the out-of-plane component of lift load which may be defined as that component of lift load directed perpendicular to a straight line formed by joining the centroids of areas of corresponding airfoils of said first and second pairs, and said first set of diagonally opposing corner portions is stronger than a second set of diagonally opposing corner portions, said first set of diagonally opposing corner portions being located near the upper part of the forward portion and the lower part of the trailing portion of each airfoil; and

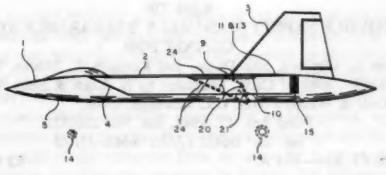
the elevational distance between the connection of said first pair of airfoils to said fin and second pair of airfoils to said fuselage is sufficiently great to provide a relatively large tilt angle.

4,365,774

CONVERTIBLE DELTA WING AIRCRAFT

Paul K. Coronel, P.O. Box 134, Kailua-Kona, Hi. 96730

Filed Aug. 8, 1980, Ser. No. 176,586
Int. Cl.³ B64C 3/38, 3/54
U.S. Cl. 244—46 10 Claims



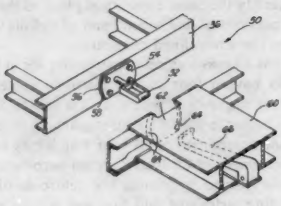
1. An aircraft with a compound flap system comprising of a set of initial flaps pivotably attached to the trailing edges of a set of fixed wings, a set of dependent flaps pivotably attached to the rear of the initial flaps, a concomitant stabilizer located immediately to the rear of the dependent flaps forming the rear portion of the wing during high-speed flight, and achieving independence and performing as a horizontal stabilizer during actuation of the flap system; the flap system including a means of creating slots between the fixed wing and initial flaps, initial flaps and dependent flaps; an operating mechanism of the flap system comprising parallel initial flap supports attached at one end to the initial flaps, and at the other end to an actuation arm pivotably attached to the fixed wings; the flap supports being actuated through the movement of sliding support actuators located within the actuation arm, the dependent flaps being connected to a rear flap support by a pivotably attached dependent flap support which lowers the dependent flap as the initial flap supports are lowered; the flap system being driven by a flap actuation mechanism utilizing a power source.

4,365,775

COWL STRUCTURE ALIGNMENT AND SHEAR DEVICE

Jerry L. Glancy, Wichita, Kans., assignor to The Boeing Company, Seattle, Wash.

Filed Dec. 8, 1980, Ser. No. 214,185
Int. Cl.[3] B64D 29/06
U.S. Cl. 244—53 R 8 Claims



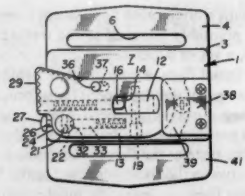
1. An improved latch for securing together a pair of hinged cowlings surrounding an aircraft engine, the latch comprising:
- a mounting plate secured to one of the hinged cowlings;
- a latch keeper secured to the mounting plate and extending outwardly therefrom;
- a latch housing secured to the other hinged cowling, the latch housing having a mounting plate opening therein, the opening dimensioned so the sides of the opening bear against the sides of the mounting plate when the mounting plate is received therein, the mounting plate opening being sufficient in size to receive the mounting plate therein so the hinged cowlings may be disposed adjacent to each other when in a latched position, the mounting plate having sides with the edge of the sides of the mounting plate beveled for ease in guiding the mounting plate into the mounting plate opening when the hinged cowlings are secured together; and
- means for releasably engaging the keeper and securing the cowlings together during the operation of the aircraft, the means for releasable engaging the keeper attached to the latch housing.

4,365,776

DOUBLE SAFETY MANUALLY RELEASABLE STRAP CONNECTOR

John A. Gaylord, San Diego, and Kenneth A. Marks, Cherry Valley, both of Calif., assignors to H. Koch & Sons, Div. of Gulf & Western Mfg. Co., Anaheim, Calif.

Filed Apr. 17, 1981, Ser. No. 255,322
Int. Cl.[3] B64D 17/30; A44B 11/25
U.S. Cl. 244—151 A 12 Claims



1. In a double safety manually operated strap connector device comprising:
- a female member;
- a strap holder on said female member;
- a male member insertable into said female member;
- a strap holder on said male member;
- rotatable inter-connecting means in said female member releasably interlocking with said male member;
- manipulatable operating means on the female member for rotating said inter-connecting means into and out of inter-connecting attitude;

the improvement of

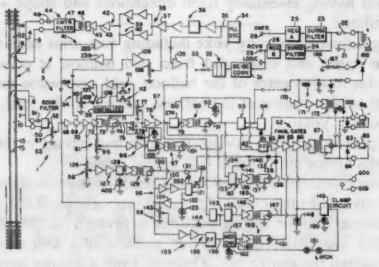
- a turning element projecting to the outside of said female member from said inter-connecting means;
- a lever on said female member for turning said turning element for rotating said inter-connecting means, said lever being slidable and turnable on said female member;
- a first latching device on said lever releasably engaging said female member to prevent turning of said lever and being releasable by sliding said lever;
- a second latching device on said lever locking said lever against sliding;
- manipulatable means for releasing said second latching device thereby to permit sliding of said lever so as to release said first latching device and permit sliding and turning said lever for rotating said inter-connecting means for engaging an disengaging said male member.

4,365,777

TRAIN APPROACH DETECTOR

Willard L. Geiger, Chagrin Falls, Ohio, assignor to Modern Industries Signal Equipment, Inc., Cleveland, Ohio

Filed Aug. 17, 1979, Ser. No. 67,321
Int. Cl.[3] B61L 1/02, 1/12, 21/06
U.S. Cl. 246—130 88 Claims



1. A circuit for developing an AC output signal, comprising input means for providing an input AC signal, plural channel means for dividing such input AC signal into plural respective AC signals, modulating means for modulating one of such respective AC signals, combining means for summing such modulated AC signal and at least another one of such respective AC signals to obtain a combined AC signal, filter output means for filtering such combined AC signal to produce such AC output signal, and coupling means for coupling such AC output signal to a track and detector means also coupled to such track for responding to changes in such AC output signal as an indication of at least one of the passing of a vehicle on the track and the condition of the track.

4,365,778

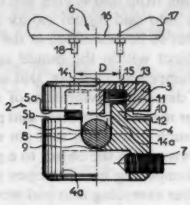
ROD-TYPE SUPPORT FOR SUSPENSION SYSTEMS FOR SHELVES AND SIMILAR OBJECTS

Pierre Joussemet, 5, boulevard Suchet, 75016 Paris, France

Filed Nov. 19, 1979, Ser. No. 95,800
Claims priority, application France, Oct. 23, 1979, 79 26211
Int. Cl.[3] F16M 13/00
U.S. Cl. 248—229 13 Claims

1. A rod-type support device for supporting a shelf or other object on a rod extending between two spaced anchoring means, the support device comprising a front member and a back member receiving the rod between them, the front member only having in its rear face a groove to receive the rod, means for assembling the front and back members to clamp the rod between them and means for fastening to said support device said object to be supported, said assembling means

comprising an externally threaded cylindrical portion projecting integrally from the rear face of said front member and bifurcated by said groove and a complementary internally threaded cavity formed in the front face of said back member into which said externally threaded projecting portion of said front member is screwed, means for rotating said back member relative to said front member to screw it onto said externally threaded projecting portion of said front member, and a stud



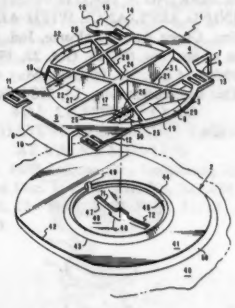
provided centrally of said cavity of said back member and having an inner end in the same plane as an annular front face of said back member around said cavity, said rod being pressed against the bottom of said groove in said front member by pressure exerted at three spaced contact points aligned in a direction parallel to the rod axis, a first point consisting of the inner end of said stud and the other two points consisting of diametrically opposed portions of said annular front face of said back member.

4,365,779

TILT AND ROTATE APPARATUS FOR A DISPLAY MONITOR

Bobbie D. Bates, and Ralph A. Haus, both of Austin, Tex., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Jun. 16, 1980, Ser. No. 159,553
Int. Cl.³ A47G *29/00*
U.S. Cl. 248—371 **7 Claims**



1. An apparatus for permitting, and limiting the extent of, tilting and rotating of a display monitor, said apparatus comprising in combination:

(a) a top portion having a spherically contoured surface, a key means extending from said surface, and wings
  (1) adjacent said surface,
  (2) extending outwardly and downwardly from said surface a sufficient extent to limit vibration of said monitor, and
  (3) having bottom surfaces which are arcuate in shape and have a curvature matching that of said contoured surface of said top portion; and

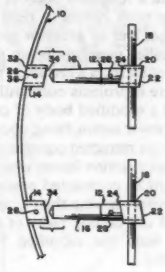
(b) a bottom portion having
  (1) a contoured surface for mating with said contoured surface of said top portion and having an annular lip,
  (2) a lock adapted to be engaged by said key for limiting the extent of tilting of said monitor,
  (3) means extending from said bottom portion for engaging said top portion and limiting the extent of rotation of said monitor, and
  (4) a plate extending circumferentially from said annular lip, and being of a sufficient size to be contacted by said arcuate shaped bottom surfaces during tilting and rotating of said monitor to limit vibration of said monitor for the extent of rotation of said monitor when said top and bottom portions are connected.

4,365,780

REMOVABLE INSERT FOR FORMING HOLES IN CONCRETE AND THE LIKE

Craig B. Williams, Fayetteville, Ga., assignor to M. A. Industries, Inc., Peachtree City, Ga.

Filed Mar. 23, 1981, Ser. No. 245,873
Int. Cl.³ E02B *00/00*
U.S. Cl. 249—11 **8 Claims**



1. In a concrete insert to be positioned on and from one side of a concrete form prior to the pouring of concrete, such as forming step holes in a manhole, for removal to provide an opening in the concrete from one side thereof after the concrete has sufficiently cured:

a concrete insert assembly comprising an elongated, rigid concrete insert member for positioning through and from one side of the concrete form so as to be supported in place at the time the concrete is formed for subsequent removal therefrom to provide a hole in the concrete,

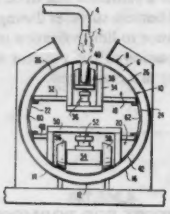
an open insert retaining member attached to said concrete form on one side thereof to receive said insert member inserted therethrough for rotation therein so that said insert member projects through said form into the area in which concrete is poured for linear movement from said open retaining member and also projects in the other direction on the other side of the form, said retaining member having a cam edge on the external end providing a cam surface,

a cam member on said insert member for cam engagement with the cam surface on said retaining member whereby said cam member is positioned against said cam surface in a selected position at the time the concrete is poured whereby rotation of said insert member, such as by manual movement from a tool, brings said cam member into engagement with said cam surface thereby causing linear displacement of said insert member to disengage and dislodge same from said concrete.

4,365,781
METHOD AND APPARATUS FOR CASTING TUBULAR BODIES

Johannes Johannson, Caracas, Venezuela, assignor to Lagoven, S.A., Caracas, Venezuela

Filed Apr. 2, 1981, Ser. No. 250,325
Int. Cl.³ E21D *10/00*
U.S. Cl. 249—11 13 Claims



1. A collapsible internal form for use in casting a fluent solidifiable material such as concrete, comprising,

a plurality of sections which are movable toward and away from each other from an expanded position which they assume when fluent material is cast thereabout to a contracted position which they occupy when the form is removed from a solidified body of cast material,

each of said sections having a rigid outer casting face, a pusher member and an actuator means,

each of said pusher members being movable relative to its respective section from a retracted position to an extended position where it projects outwardly beyond the face and bears against a solidified body of cast material,

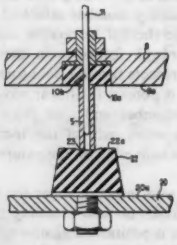
each of said actuator means being operable to move a pusher member from its retracted position to its extended position and to produce reaction forces which move the respective section toward its contracted position,

said pusher members having their extended positions located so as to hold the casting faces of the sections in spaced relationship from the solidified body of cast material formed thereby.

4,365,782
MOULDING TOOL

Bengt Persson, Götene, Sweden, assignor to Br. Perssons Cementvarufabrik AB, Sweden

Continuation of Ser. No. 124,671, Feb. 26, 1980, abandoned. This application Oct. 19, 1981, Ser. No. 313,030
Claims priority, application Sweden, Mar. 1, 1979, 7901847
Int. Cl.³ B28B *7/06, 7/16, 23/00*
U.S. Cl. 249—91 2 Claims



1. A moulding tool for moulding an article from vibrated concrete, the article having embedded therein an object adapted to receive a pin to locate the object, said moulding tool comprising:

a body member and a cover member cooperating to define a mould cavity having internal surfaces and adapted for vibration to vibrate concrete therein;

a resilient sealing and dampening member in a first one of said body member and said cover member, having an open passage therethrough, and having an exposed surface facing said mould cavity and coplanar with a first internal surface of said mould cavity;

a pin member slidingly but sealingly passing through said sealing and dampening member open passage and normally extending from said sealing and dampening member open passage into said mould cavity and adapted to receive an object to be embedded in the moulded article to retain the object within the mould cavity adjacent said sealing and dampening member, said sealing and dampening member dampening vibration of said body member and said cover member to protect said pin member and the object from such vibrations, said pin member capable of being withdrawn from the object to a position within said sealing and dampening member open passage; and

a resilient member extending into said mould cavity from the other one of said body member and said cover member and having a surface positioned opposite said sealing and dampening member to form a mould core for engaging the object while the object is retained by said pin member to depress said resilient member surface in the area immediately adjacent the object to retain the object in such position even after said pin member is withdrawn therefrom to the position within said sealing and dampening member open passage, with said sealing and dampening member dampening vibrations from said pin member and the object as the concrete is vibrated and cooperating with said resilient member to seal the interior of the object from the concrete;

said cover member being removable from said body member to permit removal from the mould cavity of the moulded article with the object embedded therein while said sealing and dampening member and said resilient member remain with their respective ones of said body member and said cover member.

4,365,783
MOLD FOR MAKING A TOOTH POSITIONING AND RETAINING APPLIANCE WITH AIR HOLES

Peter C. Kesling, Green Acres, LaPorte, Ind. 46350

Continuation of Ser. No. 87,313, Oct. 22, 1979, abandoned, which is a division of Ser. No. 902,874, May 4, 1978, Pat. No. 4,195,046. This application Aug. 13, 1981, Ser. No. 292,668
Int. Cl.³ B29C *1/12, 1/14*
U.S. Cl. 249—124 6 Claims

1. A mold for making an arch-shaped resilient tooth positioning appliance having a body with upper and lower archways for teeth with air holes extending through the body and between the archways to allow the wearer to breathe through the mouth when the appliance is worn on the teeth, said mold comprising a body having a pair of mating mold sections, models of the upper and lower arches and arch-shaped cavities formed in the body sections for molding the appliance body and upper and lower archways, and an insert removably dis-

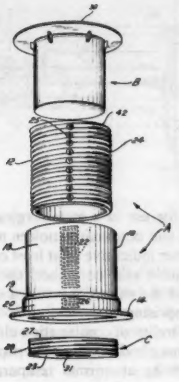
posable between the sections and across the cavities for molding the air holes, said insert being comb-shaped and having a plurality of fingers extending from a head portion, at least one of said sections having mating recess portions for receiving the head portion and a part of the fingers adjacent thereto and the free ends of the fingers for retaining the insert in a predetermined position during the molding process.

4,365,784

APPARATUS FOR OBTAINING A TEST CORE

Joseph R. De Stasio, 710 Shore Rd., Spring Lake Heights, N.J. 07762

Filed Feb. 10, 1981, Ser. No. 233,293
Int. Cl.³ B28B *7/10*; B29C *1/16*
U.S. Cl. 249—139 **20 Claims**



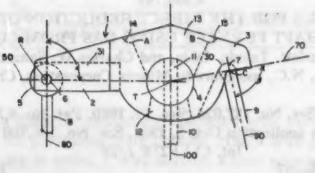
1. Apparatus for obtaining a test core from a concrete layer poured on a form comprising an outer member, having an open bottom and top, an inner member, having a closed bottom and open top, and being adapted to be inserted within said outer member so as to receive concrete therein, and a cap member, having means thereon alternatively adapted to engage and close said bottom of said outer member, and to cover said top of said outer member, so as to provide a support for a location determining member.

4,365,785

ROCKER-ARM HAVING PERPENDICULAR GEOMETRY AT VALVE MID-LIFT

James M. Miller, 1688 Indiana Dr., Galesburg, Ill. 61401

Filed Dec. 1, 1980, Ser. No. 211,638
Int. Cl.³ F01L *1/18*; F16K *31/44*
U.S. Cl. 251—231 **16 Claims**



1. In a roller-tip rocker-arm for moving a valve of an internal combustion engine, wherein said rocker-arm is adapted for pivotal movement about a horizontal axis of a trunnion mounted in the body of said rocker-arm, said rocker-arm has on a nose portion thereof, spaced from said trunnion, a rotatable horizontal roller having an axis parallel to said axis of said trunnion, said roller being adapted to contact and abut the end of a stem of a valve during the length of travel of said valve stem, with a valve to which said stem is connected being lifted from a seat therefor when said stem is depressed by said roller, and said rocker-arm has on a tail portion thereof, spaced from said trunnion and removed from said roller side of said arm, an arcuate surface adapted to contact and abut the cooperatively shaped end of a pushrod, which reciprocates along a fixed given axis with said tail of said rocker-arm being lifted by said pushrod, which, in turn, causes said roller to depress said valve stem, during the length of upward travel of said pushrod, the improvement comprising:

positioning said roller and arcuate surface so that, at the point wherein said valve is lifted one-half of the total length of travel of the valve stem from its valve seat by the motion of said rocker-arm,

(a) the axis of said valve stem defines an angle of essentially 90 degrees with an axis intersecting said axes of said roller and trunnion,

(b) the axis of said end of said pushrod defines an angle of essentially 90 degrees with an axis intersecting said trunnion and the center of said arcuate surface, and

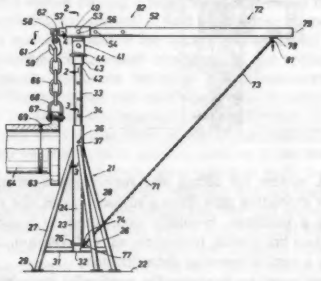
(c) means for adjusting said rocker-arm to simultaneously maintain the essentially 90 degree angles α and β at the one-half valve lift point.

4,365,786

CONSTRUCTION MOVING, POSITIONING AND HOLDING TOOL

James L. Osteen, 2012 Jeridons, LaMarque, Tex. 77568

Filed Nov. 28, 1980, Ser. No. 211,420
Int. Cl.³ E21B *19/00*
U.S. Cl. 254—30 **9 Claims**



1. A manual tool for moving, positioning and holding a workpiece relative to a selected work area comprising;

(a) a wide stance base operably positioned on the selected work area and said base having a tubular support with divergent legs carrying flat surfaces adapted to rest upon planar surfaces on a work area;

(c) a tubular upright extension received within said tubular support on said base;

(d) pin means cooperating with openings in said upright extension and said tubular support for securing said upright extension at predetermined positions within said base;

(e) a head mounted atop said upright support, said head carrying a pin received within the end of said upright extension whereby said head can rotate about the axis of said extension, and said head carries a tubular socket interconnected by a pivoted joint to said pin whereby said tubular socket can pivot transversely to said upright extension;

(f) a tubular operating lever intermediate its first and second ends within said socket, a workpiece support means provided at the first end of said lever and a hand gripping portion provided at the second end of said lever;

(g) anchor means extending between said base and the second end of said lever for retaining said lever in a selected attitude relative to said upright extension;

(h) pin means cooperating with openings in said tubular socket and said lever whereby the length of said lever between said head and said workpiece support means can be adjusted between several predetermined positions; and

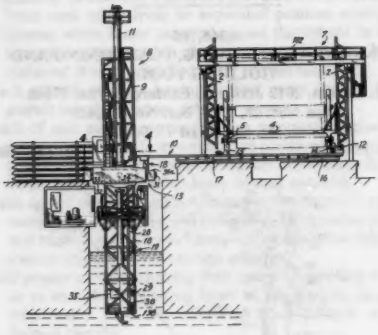
(i) said lever adjacent said tubular socket carries a safety portion adapted to bend before sufficient force can be applied to said hand grip portion to exceed the safe load limit of the tool.

4,365,787

PIPE STRING LIFT SYSTEM

John P. Latimer, Newport News, Va., assignor to Deepsea Ventures, Inc., Gloucester Point, Va.

Filed Dec. 28, 1979, Ser. No. 108,122
Int. Cl.³ B66F *1/00*
U.S. Cl. 254—106 **7 Claims**



1. A system for lifting and supporting a string of downwardly extending pipe from a surface vessel, the system comprising a platform, pivotally connected to a surface vessel about two horizontal, transverse axes of rotation, the platform having a central opening therethrough;

a hoist carriage, reciprocally, vertically, movably supported by the platform and having a central opening therethrough, in line with the central opening of the platform;

first pipestring support means and second pipestring support means secured to the platform and hoist carriage respectively, and so arranged thereon that the first and second support means are in close-coupled relationship when the hoist carriage is in a position immediately adjacent the platform;

the first and second pipestring support means each comprising: a plurality of hydraulically activated, reciprocally, radially movable support plates spaced about the central openings; mechanical stop means for predetermining the distance each support plate can move radially inwardly to a supporting position, enabling presetting of the support plates for pipe of varying outer diameters; and

mechanical locking means for mechanically locking the support plates into its radially inwardmost, preset, supporting position;

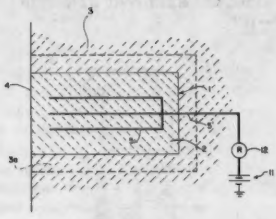
whereby a pipestring is vertically moved between the surface vessel and the ocean floor by being alternately engaged and supported by the first and second support means, on complementary sets of close-coupled surfaces on the segments of the pipestring.

4,365,788

PROCESS AND APPARATUS FOR DETERMINING THE LEVEL OF MOLTEN METAL IN A METALLURGICAL VESSEL, THE TEMPERATURE OF THE MOLTEN METAL AND THE EXTENT OF WEAR OF THE REFRACTORY LINING OF THE VESSEL

Franz-Rudolf Block, Roetgen, Fed. Rep. of Germany, assignor to Didier-Werke AG, Wiesbaden, Fed. Rep. of Germany

Filed Apr. 23, 1982, Ser. No. 371,490
Claims priority, application Fed. Rep. of Germany, Apr. 28, 1981, 3116688
Int. Cl.³ H05B *7/18*
U.S. Cl. 266—44 **20 Claims**



1. A process, for use in a metallurgical container having a refractory lining and containing molten metal, of measuring at least one parameter indicative of at least one of the level of said molten metal within said container, the temperature of said molten metal, and the extent of wear of said refractory lining, said process comprising:

providing a plurality of combination electrodes, each including a refractory body having the property of high electrical conductivity at normal temperatues of said molten metal, and electrical conductor means embedded within said refractory body;

positioning said plurality of combination electrodes at various positions of said refractory lining, with refractory material having a low electrical conductivity positioned between said combination electrodes;

connecting a power source to said electrical conductor means of said plurality of combination electrodes, whereby there occur first electrical resistances through said refractory bodies from the interior of said metallurgical container to said electrical conductor means and second electrical resistances between said electrical conductor means; and

measuring values of said first and second resistances as parameters indicative of at least one of said level of said molten metal within said container, said temperature of said molten metal, and the extent of wear of said refractory lining.

4,365,789

APPARATUS FOR THE DIRECT REDUCTION OF IRON IN A SHAFT FURNACE USING GAS FROM COAL

John C. Scarlett, Toledo, Ohio, and Charles W. Sanzenbacher, Charlotte, N.C., assignors to Midrex Corporation, Charlotte, N.C.

Division of Ser. No. 187,024, Sep. 15, 1980, Pat. No. 4,331,470. This application Oct. 5, 1981, Ser. No. 308,700
Int. Cl.³ F27B *1/28*
U.S. Cl. 266—87 **3 Claims**

1. Apparatus for the direct reduction of iron oxide and production of fuel gas comprising:

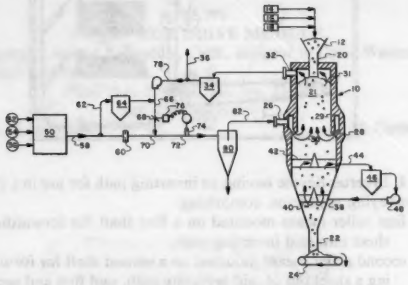
(a) a solid fossil fuel gasifier for producing a hot gasifier gas;

(b) cooling means communicating with said gasifier for cooling a portion of said hot gasifier gas and tempering said gas, said cooling means comprising a hot gasifier gas conduit communicating with said gasifier, said conduit having therein a restrictive orifice for creating a resistance

to gas flow therethrough, a gas by-pass conduit communicating with said hot gas conduit at a first by-pass junction on the upstream side of said orifice and a second by-pass junction on the downstream side of said orifice, said by-pass conduit having therein a hot gas cooler;

(c) a hot gas cyclone communicating with said cooling means for removing particulate material from said tempered gas and forming a clean tempered gas;

(d) a temperature monitoring device in said hot gas conduit downstream from said second by-pass junction, and a valve in said by-pass conduit downstream from said cooler, said valve being connected to and responsive to output signals from said temperature monitoring device;



(e) a continuous gravity flow shaft furnace containing a burden comprising iron oxide, solid fossil fuel and limestone, having burden feed means at its upper end and product removal means at its lower end, along with an intermediate tempered gas introducing means and spent gas removal means near its upper end above the burden stockline;

(f) a cooler scrubber communicating with said spent top gas removal means for forming clean cool fuel gas; and

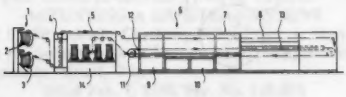
(g) a recycle gas conduit communicating with said top gas cooler scrubber and said hot gas conduit for recycling cleaned top gas to said shaft furnace.

4,365,790

PLANT FOR PRODUCING ENAMELED WIRE USING AN INLINE PROCESS

Miklos Horvath, and Hans-Peter Pichler, both of Graz, Austria, assignors to Mag Maschinen und Apparatebau Gesellschaft mbH, Graz, Austria

Filed May 19, 1981, Ser. No. 265,125
Int. Cl.³ C23D *9/00*
U.S. Cl. 266—103 **17 Claims**



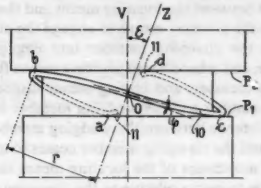
1. In a plant for producing enameled wire using an inline process for processing wire coming from a wire pay-off system, having in order, a wire drawer, a bare wire annealer, an enamel dope coater, an enamel processing unit and an enameled wire take-up unit, wherein the improvement comprises the plant having a common oven housing within which the bare wire annealer and the enamel processing unit are placed as single processing stage, a retort, structures having within them a drying space and jointed thereto a curing space, a return shaft and a blower for blowing hot air current in a single circuit in counter current with respect to said wire.

4,365,791

COIL SPRING HAVING A SMALL AXIAL AND RADIAL OVERALL SIZE

Michel A. Orain, Conflans-Ste. Honorine, and Roger P. Thiault, Saint-Ouen-l'Aumone, both of France, assignors to Glaenzer Spicer, Poissy, France

Continuation of Ser. No. 115,938, Jan. 28, 1980, abandoned. This application Jan. 13, 1982, Ser. No. 339,056
Claims priority, application France, Feb. 19, 1979, 79 04113
Int. Cl.³ F16F *1/34*
U.S. Cl. 267—166 **10 Claims**



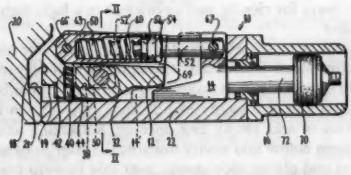
1. In a structure comprising a trunnion of a homokinetic joint, a shoulder on the trunnion, a roller rotatably and axially slidably mounted on the trunnion and having an annular end face confronting said shoulder, and means for biasing the roller axially outwardly of the trunnion away from the shoulder; the improvement wherein said roller biasing means comprise a helical coil spring of metal wire coaxial with said trunnion and said roller and freely rotatably mounted for operation in a given compressed condition between the shoulder and the roller and in contact with the shoulder and the end face of the roller, the coil spring having a small axial and radial overall size and comprising a single coil of said wire whose overall size axially of the spring is equal to the thickness of said wire in the maximum possible compressed condition of the spring and whose maximum deflection between a free uncompressed condition of the spring and said maximum possible compressed condition of the spring is substantially between 6 and 10 times said overall size in said maximum possible compressed condition, the roller having an axial position relative to the shoulder in operation of the homokinetic joint which is such that said given compressed condition is substantially but not quite said maximum possible compressed condition, the coil spring having end portions having surfaces which confront said shoulder and said end face of the roller but extend at an angle relative to a plane perpendicular to the axis of the spring which is less than the helix angle of the rest of the spring in the compressed condition of the spring.

4,365,792

HYDRAULIC MOULD CLAMP

Roy W. Johns, Dromana, Australia, assignor to Johns Consolidated Limited, Clayton, Australia

Filed Nov. 12, 1980, Ser. No. 206,238
Claims priority, application Australia, Aug. 26, 1980, PE5249
Int. Cl.³ B23Q *3/08*
U.S. Cl. 269—24 **13 Claims**



1. A clamp comprising a clamping member provided with a

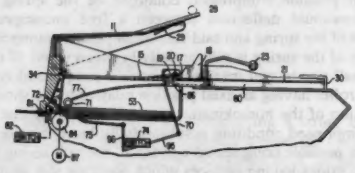
clamping surface for engaging a portion of a workpiece, means for locating the clamping member so that the clamping surface is adjacent the workpiece, means for pivoting the clamping member to clamp the clamping member against the workpiece wherein said pivoting means comprises a wedging member which is engageable with the clamping member to pivot the clamping member into clamping engagement with the workpiece wherein said locating means moves said clamping member to a position adjacent the workpiece and said pivoting means is moveable relative to said clamping member when the clamping member is adjacent the workpiece said pivoting means forming part of the locating means so that the relative movement between the locating means and the clamping member causes the pivoting means to engage the clamping member and pivot the clamping member into engagement with the workpiece; and wherein said pivoting means further comprises a wedging member, and biasing means disposed between the clamping member and the wedging member for maintaining a constant distance between the wedging member and clamping member until the clamping member ceases to move whereupon continued movement of the locating means causes said wedging member to move relative to the clamping member against the bias of said biasing means so that a wedging surface on the wedging member engages the clamping member to pivot the clamping member to clamp against the workpiece.

4,365,793

SHEET FILM FEEDER

Gerardus J. Van Blokland, and Henry J. Bailey, both of Fairfax, Va., assignors to Oldelft Corporation of America, Fairfax, Va.

Filed Nov. 6, 1979, Ser. No. 91,702
Int. Cl.³ B65H *3/06, 1/06*
U.S. Cl. 271—3.1 **11 Claims**



5. A film feeding device for receiving a stack of individual film sheets and feeding the sheets individually to a film processor comprising:

a holder for receiving and holding a film storing magazine,

a cavity below said holder, said cavity having an upward opening for receiving a stack of film sheets from the film storing magazines and an exit opening for discharging said film sheets,

a planar slide in the holder, between the magazine and said cavity for opening the film storing magazine in a light-tight manner and for opening said upward cavity opening in a light-tight manner,

means for moving said planar slide from between the magazine and said upward cavity opening,

a closure for closing said cavity exit in a light-tight manner, and

transport means associated with said cavity for moving the film sheets individually through said exit closure,

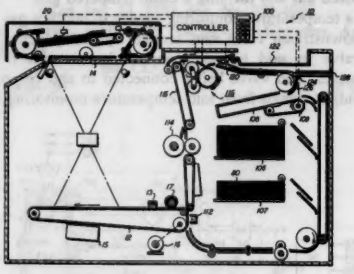
said transport means comprising a powered roller below said cavity at said cavity exit opening, rotatable in the direction of said cavity exit opening, a stacking arm pivoted from below said cavity towards the interior of said cavity as said planar slide covers over said upward cavity opening, and an arm and roller which moves into said cavity as said planar slide covers over said upward cavity opening.

4,365,794

TOGGLE ARM INVERTER

George J. Roller, Rochester, NY, assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 2, 1980, Ser. No. 193,227
Int. Cl.³ B65H *29/00*
U.S. Cl. 271—186 **4 Claims**



1. Inverter device having an inverting path for use in a sheet conveying apparatus, comprising:

first roller means mounted on a first shaft for forwarding a sheet into said inverting path;

second roller means mounted on a second shaft for forwarding a sheet out of said inverting path, said first and second shafts being supported by brackets that are pivotally connected to a rotatable third shaft;

reversible drive means connected to said third shaft; and

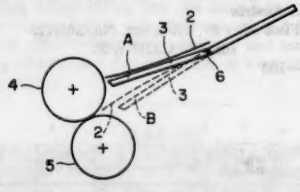
pivot means for drivingly connecting either said first or second roller means to said sheet as a result of actuation of said reversible drive means.

4,365,795

SHEET ORTHOGONAL-CONVEYING METHOD AND DEVICE

Osamu Fukushima, and Takashi Koizumi, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 17, 1980, Ser. No. 198,040
Claims priority, application Japan, Oct. 22, 1979, 54/136076
Int. Cl.³ B65H *9/00*
U.S. Cl. 271—236 **10 Claims**



1. A sheet orthogonal-conveying method in which a sheet guided while sliding under its own weight is positioned with the front edge thereof orthogonal to the direction of advancement of said sheet and is then conveyed with a pair of rollers comprising the steps of: sliding said sheet downwardly at an angle such that the front edge of said sheet sliding down under its own weight comes in contact with a smooth surface of one roller of said pair of rollers so that said sheet is stopped by said one roller with said front edge orthogonal to said direction of advancement; and reorienting a plane of said sheet to introduce said front edge of said sheet between said pair of rollers to be conveyed thereby in said direction of advancement.

5. A sheet orthogonal-conveying device in which a sheet

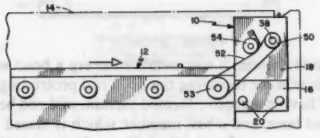
sliding down under its own weight is positioned with the front edge thereof orthogonal to the direction of advancement of said sheet and is then conveyed with a pair of rollers comprising: a pair of rollers having smooth surfaces, a nip being continuously formed between said rollers, and said rollers being rotated in a direction so as to convey said sheet in said direction of advancement; and a guide member for disposing said first edge of said sheet sliding down into contact with one roller of said pair of rollers at an angle so as to stop said sheet, said guide member being shiftable to a position to introduce said sheet into said nip between said pair of rollers after said front edge of said sheet has been brought into contact with said one roller to stop said sheet.

4,365,796

TICKET EXIT DRIVE MODULE

Gregory E. Miller, Escondido, Calif., assignor to Cubic Western Data, San Diego, Calif.

Filed Dec. 1, 1980, Ser. No. 211,027
Int. Cl.³ B65H *5/02*
U.S. Cl. 271—274 **10 Claims**



1. A ticket exit drive module for detachably mounting as a unit in interfacing cooperation with a transport module in a ticket processing system, said module comprising:

housing means defining a ticket passage having an inlet for interfacing with and receiving a ticket from an adjacent transport module and an exit for returning a ticket to a patron,

said housing including an upper guide plate and a lower guide plate cooperatively defining said ticket passage,

a pair of vertically disposed end plates supporting said guide plates therebetween, one of said end plates including mounting means for detachable mounting on a vertical support panel, and

drive means extending into said passage for engaging and driving a ticket along said ticket passage.

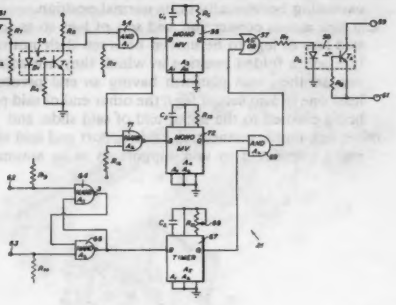
4,365,797

SPEED COMPENSATED TIMING CIRCUIT FOR ACTUATING A SHEETER MACHINE

Donald C. Fitzpatrick, Chatham, N.Y.; Peter A. Gerard, and John F. Davison, both of Dalton, Mass., assignors to Beloit Corporation, Beloit, Wis.

Filed Feb. 7, 1980, Ser. No. 119,353
Int. Cl.³ B65H *29/58*
U.S. Cl. 271—303 **2 Claims**

1. Means for actuating at the proper time a gate device which receives a plurality of moving sheets which are spaced apart, comprising means for measuring the velocity of said sheets, a sheet detector mounted so as to be energized by the spacing between said sheets, said gate device spaced a known distance from said sheet detector, a gate actuator connected to said gate means for actuating it, and control means receiving inputs from said means for measuring velocity and said sheet detector and supplying an output to said gate actuator to actuate it and wherein said control means includes a first AND gate, a first NAND gate, first and second monostable multivibrators and a timer, the output of said sheet detector connected to said first AND gate, the output of said first AND gate connected to said first multivibrator and to said first NAND gate, the output of said first NAND gate connected to said



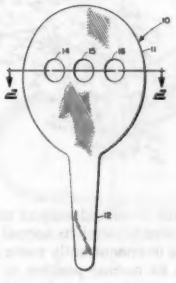
second multivibrator, a second AND gate receiving the outputs of said timer and said second multivibrator, and a first OR gate receiving the outputs of said first multivibrator and said second AND gate.

4,365,798

NOVELTY MIRROR

Robert M. Shields, and Ted A. Shields, both of 4815 Topeka Dr., Tarzana, Calif. 91356

Filed Jun. 30, 1981, Ser. No. 279,035
Int. Cl.³ A63J *3/00*
U.S. Cl. 272—8 M **7 Claims**



1. A novelty mirror which includes three holes therethrough wherein the holes farthest apart are spaced approximately the distance between the eyes of the user and at least one reflective surface of sufficient size to reflect a substantial portion of a human face, said holes include a center hole equally spaced between said farthest apart holes and said three holes are in substantial horizontal alignment.

4,365,799

FOLDING SLIDE AND PLATFORM STRUCTURE

Edward D. O'Brian, 2125 W. Falmouth, Anaheim, Calif. 92801, and William M. Plachy, 182 Cerco Rosado, San Marcos, Calif. 92069

Continuation-in-part of Ser. No. 963,377, Nov. 24, 1978, abandoned. This application Nov. 4, 1980, Ser. No. 203,878
Int. Cl.³ A63G *21/00*; A63B *17/00*
U.S. Cl. 272—56.5 R **15 Claims**

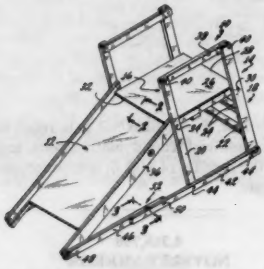
1. A structure having an elongated slide normally located at an angle to the horizontal and a support normally located to hold the upper end of said slide in its normal position, said

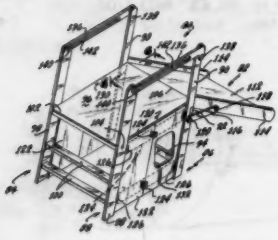
structure having sides which are spaced from one another, in which the improvement comprises:

said support including two sets of legs, one leg of each of said sets being located at each of said sides of said structure, said support also including link means and a platform extending horizontally in its normal position,

said link means connecting said sets of legs so as to permit said sets of legs to be moved between their normal position and a folded position in which they are adjacent to one another, said platform having an end pivoted to at least one of said sets of legs, the other end of said platform being pivoted to the upper end of said slide, and

other link means connecting said support and said slide and being connected to said support so as to automatically





transfer motion from said support to said slide when said support is moved between its normal position and a folded position so as to concurrently move said slide so that it is moved from its normal position to a folded position in which it extends adjacent to legs of said sets of legs,

one of said link means being pivotally connected between the sets of legs and the other of said link means being pivotally connected between said slide and one of said sets of legs and extending outwardly from said support generally toward said slide,

either one of said link means being foldable whereby on the folding thereof the sets of legs are moved parallel to one another so that said slide and said support are folded relative to one another.

4,365,800

MARTIAL ARTS STRIKER DEVICE

Hugh W. Hay, and John L. Hay, both of 1 Pennant Mews, London W.8, England

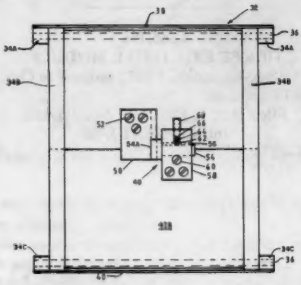
Filed Oct. 17, 1979, Ser. No. 85,539

Claims priority, application United Kingdom, Oct. 24, 1978, 41654/78

Int. Cl.³ A63J 5/00

U.S. Cl. 272—76 **2 Claims**

1. A device comprising a frame, a striker member having first and second parts which are each pivotally mounted to the frame, and locking means for locking the first and the second parts of the striker member together until the striker member is struck by a limb of a person with a force which is sufficiently large to operate the locking means whereupon the first and the second parts of the striker member will separate and pivot about the frame, the locking means having a first lock portion which is secured to the first part of the striker member and a second lock portion which is secured to the second part of the striker member, the first lock portion having a lip protruding therefrom and the second lock portion comprising a part secured to the second part of the striker member, and having a



bore formed therein, a rod member having a head with a slot formed therein for receiving the lip, a rod protruding from the head and having a groove formed therein, said rod being rotatable is said bore, and a ball member which is biased into position in the groove, whereby the ball member acts in the groove to maintain the first and second parts of the striker member together until such time as the striker member is struck with the said sufficiently large force whereupon the ball member is caused to move out of the groove to allow said rod to rotate in said bore thereby allowing the first and the second parts of the striker member to separate and pivot about the frame.

4,365,801

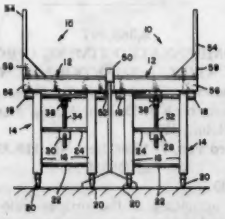
ELEVATIONAL PLATFORM FOR BALANCE BEAMS AND LIKE ARTICLES

John A. Medina, 40721 22nd St. W., and George G. Pendergast, 39007 Vananbev Way, both of Palmdale, Calif. 93550

Filed Oct. 2, 1980, Ser. No. 193,291

Int. Cl.³ A63B 7/08

U.S. Cl. 272—111 **15 Claims**



1. A pair of platforms in combination with a balance beam for use in training gymnasts, in which each platform comprises:

a generally rectangular deck having an end-to-end length which approximates that of the balance beam and a side-to-side width of lesser dimension than that of the length, so as to enable each said platform at its side to be placed respectively on each side of the balance beam;

two pairs of legs respectively hinged at a first of their paired ends to said deck at its ends, wheels at a second of their leg

ends, crossbars respectively pivoted between said paired legs, and nuts respectively coupled to said cross-bars generally at their centers; and

means coupled to said nuts for pivoting said leg pairs towards and away from each other and thereby for lowering and raising said deck so as to place each said platform deck at any selected height with respect to the balance beam.

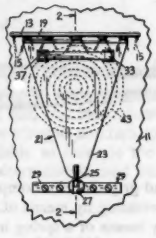
15. A method for training a gymnast on a balance beam set at a predetermined height, comprising the steps of supporting at least one height adjustable substantially rigid platform alongside and at the predetermined height of the balance beam for properly training the gymnast and for enabling a trainer to move about the platform safely during the training, and thence gradually lowering the height of the platform with respect to that of the balance beam in sequential steps while continuing the training at each step.

4,365,802

DEFORMATION-PREVENTING SWINGABLE MOUNT FOR BASKETBALL GOALS

Arthur H. Ehrat, Farmers Elevator Co., Lowder, Ill. 62662

Filed Jul. 26, 1976, Ser. No. 708,581
Int. Cl.³ A63B *63/08*
U.S. Cl. 273—1.5 R **11 Claims**



1. A basketball-goal assemblage comprising: support structure for relatively immovable attachment to a basketball backboard, relatively movable goal-ring structure yieldably swingably connected to said support structure, and means interacting between said structures to hold said structures in normal positions against normal game-applied forces but yieldable to permit shock-absorbing swinging of said goal-ring structure for minimizing goal damage from abnormal forces applied thereagainst.

11. A basketball-goal assemblage comprising: support structure for relatively immovable attachment to a basketball backboard, relatively movable goal-ring structure yieldably swingably connected to said support structure, means interacting between said structures to hold said structures in their normal relative positions against their relative movement by normal game-applied forces but yieldable with initially rapidly decreasing force-resistance to permit shock-absorbing swinging of said goal-ring structure for minimizing goal damage from abnormal forces applied thereagainst, and relatively weak force-applying means for returning said goal-ring structure to its normal interacting-means-held position.

4,365,803

GAME TABLE

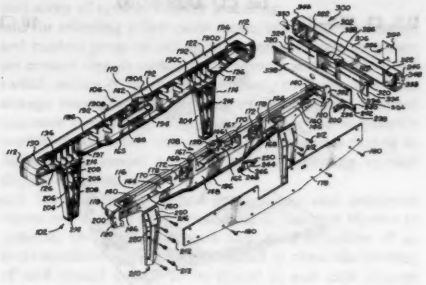
George A. Barnes, Seattle, Wash., and Walter J. Sirois, Beaverton, Oreg., assignors to Victory Games, Inc., Issaquah, Wash.

Filed Dec. 31, 1980, Ser. No. 221,525
Int. Cl.³ A63D *15/00*
U.S. Cl. 273—5 R **28 Claims**

15. In a game table construction having a bed assembly including a rectangular bed and cushions extending along the edge portions of the bed, the improvement comprising:

a table frame for supporting the bed assembly, said frame disposed outwardly from and closely surrounding the edge portions of the bed, said table frame including:

hollow side structures extending along and spaced slightly outwardly from the side edge portions of the bed assembly and including portions defining an integral siderail, apron, ball runs in cooperation with the adjacent edge portions of the bed and ball storage compartment;



hollow end structures extending along the end edge portion of the bed assembly; and

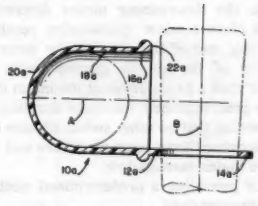
a pair of hollow leg structures integrally constructed with and extending downwardly from each of said side structures.

4,365,804

KEEPER FOR A GAME MISSILE AND A GAME IMPLEMENT

Stephen R. Melvin, 13 Highland Ave., Montville, N.J. 07045

Filed Jan. 22, 1981, Ser. No. 227,173
Int. Cl.³ A63B *47/00*
U.S. Cl. 273—25 **6 Claims**



1. A keeper, for a game missile and a game implement, comprising:

a first annulus;

a second annulus coupled to said first annulus; wherein

one of said first and second annuli has an inside diameter substantially corresponding to a cross-sectional dimension of a game missile;

the other of said first and second annuli has an inside diameter substantially corresponding to a cross-sectional dimension of a game implement;

a sleeve integral with said one annulus;

a hemispheric cup integral with said sleeve;

said sleeve defining a straight cylinder, and being tangential to said cup;

said cup, sleeve and other annulus being formed of a common material and having a substantially common material thickness of a given dimension;

said one annulus, sleeve and cup have a common, first axis;

said other annulus has a second axis;

said other annulus has an axial length of said given dimension, corresponding to said material thickness; and

said cup, sleeve, and annuli are of one-piece construction.

4,365,805

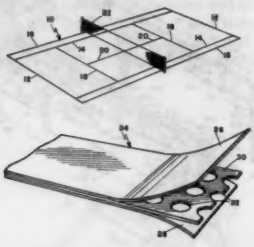
SYSTEM FOR MONITORING TENNIS COURT BOUNDARY LINES

Carl Levine, 17214 Merlot Pl., Poway, Calif. 92064

Filed Dec. 17, 1980, Ser. No. 217,431

Int. Cl.³ A63B *61/00*

U.S. Cl. 273—31 **10 Claims**



1. A system for aiding a person in determining whether a ball has struck one of a plurality of boundary lines of a playing court, comprising:

a plurality of switches extending along the boundary lines of the court, each switch including a perforated insulative layer sandwiched between upper and lower conductive layers, at least some of the layers being resilient and compressible to permit a switch closure in the form of a momentary contact between the conductive layers upon being impacted by the ball during play;

means for determining whether a switch closure resulted from a ball impacting one of the switches or from oscillations of the conductive layers of the switch toward and away from each other resulting from a foot kicking the switch, the determining means determines whether a switch closure under examination resulted from a ball impacting one of the switches by determining that the duration of the switch closure under examination is greater than a predetermined minimum duration and less than a predetermined maximum duration, and by further determining that no other switch closure occurred during predetermined time intervals before and after the switch closure under examination;

means for providing a predetermined minimum and maximum duration; and

means for providing an indication to the person if a ball has struck the boundary line associated with the switch.

4,365,806

RACKETS

Cedric N. Reid, 19 Westminster Croft, Brackley, Northamptonshire, England, and George W. Anderson, c/o Elite Sports International Ltd., Flying Horse Rd., Downpatrick, County Down, Northern Ireland

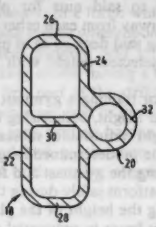
Filed May 21, 1981, Ser. No. 266,127

Claims priority, application United Kingdom, May 20, 1980, 8016673

Int. Cl.³ A63B *51/00, 49/02*

U.S. Cl. 273—73 C **7 Claims**

1. A racket for a game, comprising a strung head portion defined by a rigid frame, and a handle portion connected to or an extension of the frame, wherein the frame comprises an imperforate wall extending around the greater part of the racket head, and, integral with the wall, a rigid fixed section substantially coextensive with said wall, said fixed section having perforations at intervals to receive the stringing, said rigid fixed section being formed as an elongate hollow protuberance projecting at least partially inwardly of said wall towards the center of the racket head and being closed except



for said perforations, the geometric center of the perforations lying in the plane of stringing.

4,365,807

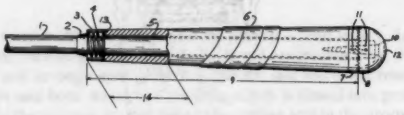
GOLF CLUB INCLUDING ROTATABLE GRIP

Phillip J. Melby, 211 N. Delaware, Mason City, Iowa 50401

Continuation-in-part of Ser. No. 174,114, Jul. 31, 1980, abandoned. This application Mar. 30, 1982, Ser. No. 363,540

Int. Cl.³ A63B *53/16*

U.S. Cl. 273—81 C **7 Claims**



6. A golf club and grip therefor comprising a rotatable unitary grip held non-rotating by means of toothed sections held meshed together by means of a spring in compression.

4,365,808

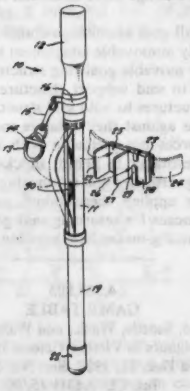
POLICEMAN'S NIGHT-STICK

Sergio J. Perez, 311 W. 97th St., New York, N.Y. 10025

Filed Mar. 17, 1981, Ser. No. 244,655

Int. Cl.³ F41B *15/06*

U.S. Cl. 273—84 R **2 Claims**



1. A policeman's night stick, comprising in combination: a tubular steel shaft secured at one end to a hardwood handle from which a steel spike protrudes through said shaft; a compression coil inside said shaft, retaining a slidable sheath around a pointed end of said spike; and a removable end cap on

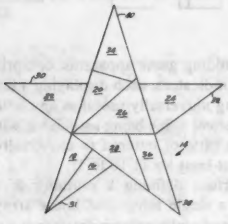
said sheath, for preventing retractable sliding of said sheath and exposure of said spike's pointed end; a thumb receiving ring suspended from said handle; a rubber band bonded diametrically across said ring for holding a thumb against an inner edge of said ring; an elastic back hand strap along a side of said shaft; and a belt clip with magnetic means for holding said night stick thereto.

4,365,809

THREE-FIGURE DISSECTION PUZZLE

Dixie B. Barry, 3850 Atlantic Ave., Space 184, Highland, Calif. 92346

Filed Mar. 9, 1981, Ser. No. 241,480
Int. Cl.³ A63F *9/10*
U.S. Cl. 273—157 R **5 Claims**



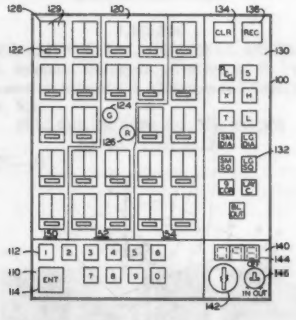
1. A puzzle comprising a plurality of basic geometric pieces shaped to be combinable to form, alternatively, a rectangle, square or five-pointed star, said basic pieces being three right triangles, four isosceles triangles and two quadrilaterals, which pieces being subdividable to increase the number of pieces combined to form, alternatively, said rectangle, square or five-pointed star.

4,365,810

GAMING BOARD

John Richardson, San Diego, Calif., assignor to Selectro-Vision, Ltd., San Diego, Calif.

Filed Sep. 28, 1979, Ser. No. 79,807
Int. Cl.³ A63F *3/06*
U.S. Cl. 273—237 **13 Claims**



1. A chance based gaming board comprising:

display means including means for visually displaying a plurality of symbols in a predetermined array of symbol display locations;

computer means including a control program stored in a nonvolatile read only memory means, data processor means controlled by said control program, data storage means including a plurality of symbol storage locations, said storage locations storing a single game board and means for generating and outputting one or more control signals;

input switch means for enabling the manual selection of one of a plurality of symbols;

array-symbol switch means including a plurality of actuatable array-symbol switches, each switch positioned adjacent a respective one of said symbol display locations for enabling the manual selection of one of said symbols in said array of symbol display locations;

means for selecting a first game mode, said processor means and control program acting in response thereto to generate control signals such that the present state of said input switch means is periodically sensed, to cause said data storage means to store said sensed symbols in a selected sequence in said symbol storage locations, and to generate control signals such that said display means is caused to display said sensed symbols in corresponding symbol display locations; and

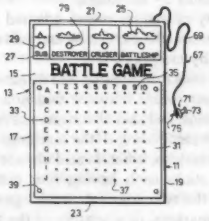
means for selecting a second game mode, said processor means and control programs acting in response thereto to generate control signals such that each actuation of an array-symbol switch means is sensed to cause the identity of said sensed switch to be stored in said data storage means and to generate one or more control signals such that said display means is caused to indicate that the sensed array-symbol switch corresponding to the symbol display location has been selected and to further visually display the stored array-symbol switch states in a manner which differs from the manner in which the non-selected array-symbol switch symbol display locations are displayed.

4,365,811

BATTLE TYPE GAME AND KIT FOR CONSTRUCTION THEREOF

Casey S. Krzes, 1198 Meadow La., Grand Island, N.Y. 14072

Filed Dec. 17, 1979, Ser. No. 104,017
Int. Cl.³ A63F *3/00*
U.S. Cl. 273—238 **6 Claims**



1. A kit for making a game of the battleship type which comprises a plurality of electrically conductive thumbtack type contact members of metal, with substantially flat heads and pointed shanks, and an electrically conductive headed and pointed probe, having a conductive pointed metal shank, electrically conductive wires, a plurality of electrically actuatable signals, a surface member, a circuit board member and a plurality of grid sheets to be individually held in place on top of and and as part of the surface member, all of which are assemblable into a game in which contact of the point of the probe with a head of a thumbtack type contact member, made when the probe passes through a grid sheet and the rest of the surface member, actuates the signal when a battery or other source of electricity is included in the electric circuit which is completed by such contact, including a plurality of synthetic organic polymeric plastic washers for use as holding means for holding conducting wires in contact with the thumbtack type contact members and the probe, which washers include openings smaller than the shank diameters of the thumbtack type contact members and the probe so that after installation on such shanks

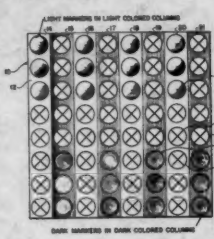
the resiliency of the washer material holds the washers in place.

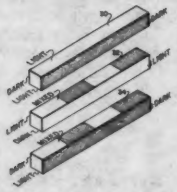
4,365,812

GAME BOARD AND APPARATUS

Leonard J. Martini, 2801 Ocean Front Walk, F, San Diego, Calif. 92109

Filed Jun. 1, 1981, Ser. No. 244,125
Int. Cl.³ A63F *3/00, 9/04*
U.S. Cl. 273—243 **1 Claim**





1. A game apparatus comprising:

a. game board means having a plurality of columns adjacently aligned and each column segmented by a plurality of holes and each column being distinguishable from adjacent columns by markings,

b. a plurality of marker means adapted for emplacement in the said holes of the columns and said marker means being grouped by markings; and

c. chance means for initiating and directing the movement of said marker means between said holes within and across said columns, and said chance means including plurality of indicia corresponding to the markings of the said columns and said markers, wherein said chance means is comprised of three sticks each having four sides distinguished by either of the two colors or markings of the said columns and said markers, or a mixture of the two colors or markings of the said columns and said markers,

wherein: The first stick has distinguishable sides alternating between the two colors or distinguishable markings of the said columns and markers,

the second stick has one side distinguishable by a mixture of the two colors or distinguishable markings of the said columns and markers, the opposite side distinguishable by the lighter of the two colors or distinguishable markings of the said columns and markers, and the remaining two sides distinguishable by the darker of the colors or distinguishable markings of the said columns and markers; and

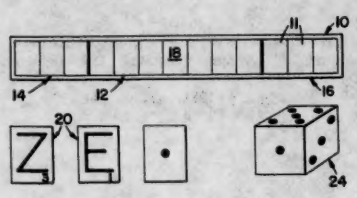
the third stick has one side distinguishable by a mixture of the two colors or distinguishable markings of the said columns and markers, the opposite side distinguishable by the darker of the two colors or distinguishable markings of the said columns and markers, and the remaining two sides distinguishable by the lighter of the two colors or distinguishable markings of the said columns and markers.

4,365,813

WORD GAME

Ernest Hirsch, 155 Sharene La., #309, Walnut Creek, Calif. 94569

Filed Sep. 5, 1978, Ser. No. 939,838
Int. Cl.³ A63F *3/00*
U.S. Cl. 273—272 **26 Claims**



1. A word building game apparatus, comprising:

a plurality of indicators, each displaying a letter of an alphabet, or being universally useful as any letter of the alphabet, a numerical value being associated with each lettered indicator, a ratio of lettered to universally useful indicators being at least about 10 to 1;

a playing surface defining a plurality of playing spaces thereon in a single integrated linear array for receiving one or more of said playing indicators at a turn of a player, to generate a first number determined by the values associated with at least a portion of the playing indicators in position on said playing spaces following said player's turn;

means for generating a second number by chance from a selected set of numbers; and

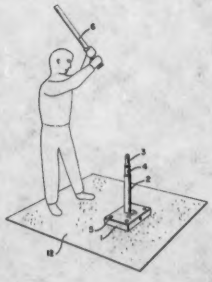
means for changing the player's score, at his turn, in an amount determined by the values of both said first and second numbers.

4,365,814

BATTING GAME

Roy M. Robinson, Rte. 7, P. Box 457, Lexington, N.C. 27292

Filed Apr. 27, 1981, Ser. No. 257,941
Int. Cl.³ A63B *67/00*
U.S. Cl. 273—317 **6 Claims**



1. A game device comprising:

1. a base;

2. an elongated open-ended hollow tube disposed upright on said base and comprising a first cylinder of larger diameter mounted vertically on said base and a second smaller cylinder of essentially the same outside cross section as the inside cross section of said larger cylinder, said smaller cylinder having one end attached within the upper, open end of said larger cylinder.

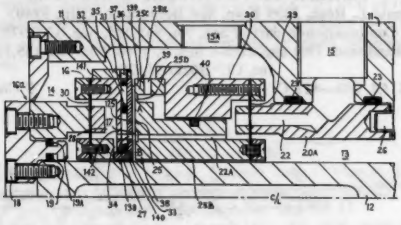
3. an elongated projectile adapted to fit in the open end of said tube and be ejected therefrom;
4. means for ejecting said projectile from said tube in response to downward pressure on the projectile in the tube, said means being disposed in said tube and adapted to engage said projectile when placed in the tube.

4,365,815

MEANS PROVIDING COOLANT BETWEEN ELEMENTS OF RADIAL FACE SEALS

Peter A. J. Scott, Rugby, England, assignor to Associated Engineering Limited, Warwickshire, England

Continuation-in-part of Ser. No. 77,433, Sep. 20, 1979, Pat. No. 4,290,613. This application Jan. 12, 1981, Ser. No. 224,366
Claims priority, application United Kingdom, Sep. 22, 1978, 37715/78; Jan. 11, 1980, 8001039
Int. Cl.³ F16J *15/16, 15/34*
U.S. Cl. 277—22 **7 Claims**



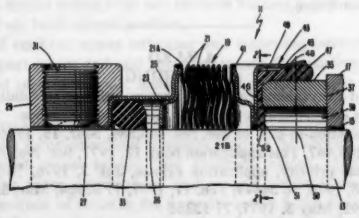
1. A positive clearance radial face seal comprising two sealing members mounted respectively on relatively rotatable shaft and housing members and each having opposed portions defining annular sealing faces having a radial clearance therebetween forming a communicating path between regions of higher and lower pressures, wherein at least one of the sealing members has a cavity behind its sealing face and defined, at least in part, by the portion of the material of the sealing member behind said sealing face, a porous thermally-conductive mass having interconnecting pores located in said cavity and in intimate thermal contact with the material of said portion, and said cavity having inlet means and outlet means for flowing a cooling fluid through the interconnecting pores of the porous mass in the cavity.

4,365,816

SELF-DAMPING BELLOWS SEAL ASSEMBLY

Norman E. Johnson, Barrington, and Daniel F. Vasconcellos, East Greenwich, both of R.I., assignors to EG&G Sealol, Inc., Warwick, R.I.

Filed Oct. 29, 1980, Ser. No. 202,344
Int. Cl.³ F16J *15/36*
U.S. Cl. 277—88 **22 Claims**



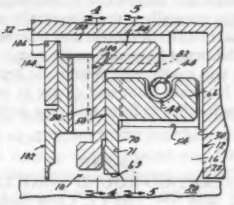
1. A self-damping bellows seal assembly for use with a rotatable shaft and a stationary member having an opening through which said shaft extends, said seal assembly providing a fluid pressure seal between said shaft and said stationary member, said seal assembly including a flexible metal bellows having a plurality of convolutions and adapted to surround said shaft, means for securing one end of said bellows with respect to said shaft, an annular face seal adapted to sealingly engage a radial face on said stationary member, an annular metal part welded at one end to said bellows and having an axial portion surrounding said face seal and a flexible annular member interposed between said face seal and the axial portion of said annular part, said flexible annular member being adapted to closely surround said shaft and to actively operate to dampen vibration in said bellows.

4,365,817

SELF ALIGNING SEGMENTED SHAFT SEAL

Arthur M. Davis, Wixom, Mich., assignor to Williams Research Corporation, Walled Lake, Mich.

Filed Apr. 17, 1981, Ser. No. 255,314
Int. Cl.³ F16J *15/32*
U.S. Cl. 277—188 R **6 Claims**



1. A segmented seal comprising
a cylindrical seal housing having a radially extending end face and an axially extending radially inwardly opening groove in the cylindrical wall thereof,
a plurality of seal segments having first radial faces, respectively, slidably engaged with the radial end face on said housing in sealing engagement, arcuate radially inner faces engageable with a shaft in slidable sealing engagement, and second radially extending faces spaced from the first faces thereon, respectively,
first resilient means biasing said seal segments radially inwardly,
a first retainer ring having a radial face slidably engaged with the second faces on said seal segments, said first retainer ring having a first axially extending lug thereon engageable with at least one of said segments to preclude relative circumferential movement between said segments and said first retainer yet permit relative radial movement therebetween, said first retainer ring having a second axially extending lug thereon,
a second retainer ring having an axially extending slot therein for the acceptance of the second lug on said first retainer ring, said second retainer ring having a radially extending lug thereon engaged in the axial slot in said housing,
second resilient means for biasing said second retainer axially against said first retainer, said first retainer against said segments, and said segments against the end face on said housing, and,
means engaged with said housing for axially positioning and retaining said second resilient means, second retainer, first retainer, and segments relative to the end face on said housing.

4,365,818

SELF-LUBRICATING PIPE JOINT SEAL WITH RUPTURABLE MEMBRANE

Wilbur E. Tolliver, 364 Hamilton Dr., Holland, Mich. 49423

Division of Ser. No. 113,358, Jan. 18, 1980, Pat. No. 4,296,933, which is a division of Ser. No. 40,273, May 17, 1979, Pat. No. 4,209,179. This application Jul. 27, 1981, Ser. No. 287,253

Int. Cl.[3] **F16J** *15/32, 15/40, 15/54*

U.S. Cl. 277—237 R **4 Claims**

1. A self-lubricating pipe joint seal fitting between and sealing connecting pipe joint members which are slid into each other to form a pipe joint comprising: a reservoir means in said seal for containing a lubricant; and means for releasing said lubricant from said reservoir means as said pipe joint members are slid into each other to form said pipe joint, said pipe joint seal being annular and said reservoir means comprising a cavity that extends generally circumferentially around said seal and contains said lubricant therein and wherein said means for releasing said lubricant from said cavity comprises a rupturable membrane on said cavity, said membrane being ruptured and releasing said lubricant from said cavity as said pipe sections are slid into each other to form said pipe joint.

4,365,819

MERRY-GO-ROUND STROLLER

Philip D. Bart, 9864 NW. 13th Ct., Coral Springs, Fla. 33065

Filed Sep. 22, 1980, Ser. No. 189,643

Int. Cl.[3] **B62B** *7/02*

U.S. Cl. 280—47.41 **8 Claims**

1. A merry-go-round stroller for receiving, transporting and rotating at least one doll when the stroller is moved on a floor surface, the stroller comprising: a chassis, a drive axle rotatably mounted on said chassis, first and second wheels rotatably mounted to said chassis to roll on said floor surface, at least the first of said wheels coupled to and rotatable with said drive axle, a shaft rotatably mounted on said chassis is generally upwardly extending orientation, said shaft having lower and upper axially-spaced parts and an intermediate part therebetween, first means coupling said axle and said lower part of said shaft in rotational drive relationship, a canopy secured to said upper part of said shaft and rotatable therewith, and a seat defining two adjacent receptacles each of which has a base for supporting said dolls and an upward facing opening, said seat comprising a frame formed by a generally rectangular first band orientated in a generally vertical plane which separates said receptacles, said first band having top and bottom parts and opposite end parts, and a generally rectangular second band oriented in a generally horizontal plane with opposite side parts and opposite end parts, said end parts of said first and second bands secured together, said second band at least partially defining the shape of said receptacle openings, said top and bottom parts of said first band each having an aperture, said apertures being axially aligned with said intermediate part of said shaft extending therethrough, and means for fixedly securing said first band to said intermediate part of said shaft for rotation therewith, whereby rotation of said first wheel, when said stroller is moved on said floor surface, rotates said axle, thereby rotating said shaft, seat and canopy.

4,365,820

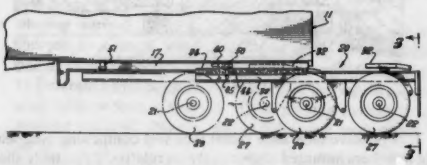
TRAILER CONNECTING RUNNING GEAR

Donald L. Rush, 2239 Kern, San Bernardino, Calif. 92405

Continuation-in-part of Ser. No. 941,383, Sep. 12, 1978, abandoned. This application Sep. 8, 1980, Ser. No. 185,180

Int. Cl.[3] **B62D** *53/08*

U.S. Cl. 280—411 C **5 Claims**



1. A running gear and trailer combination for tractor-drawn trailers, recreational vehicles and the like, especially useful for multiple trailers, said combination comprising:

a trailer support frame affixed to the underside of a trailer body, said trailer support frame having a support surface extending to about the rear of the trailer; and

a running gear member having a fifth wheel, said running gear member being slidingly attached to said trailer support frame by attachment means in a manner to permit both the longitudinal sliding of the running gear member with respect to the trailer support frame and the vertical support of the trailer support frame along substantially the entire overlapping portion of the running gear member and the trailer support frame and a locking means comprising a double fifth wheel having a pair of jaws, one jaw facing forward and one jaw facing rearward, and a pair of king pins affixed to the underside of the trailer to hold the double fifth wheel in a forward position or a rearward position, said running gear member having at least two rails slidingly held to the trailer support frame by said attachment means to prohibit the rotational movement of the running gear member with respect to the trailer support frame.

4,365,821

SKI BINDING

Armand Kreyenbuhl, Samoens, France, assignor to Adidas Fabrique de Chaussures de Sport, Landersheim, France

Continuation-in-part of Ser. No. 666,589, Mar. 15, 1976, Pat. No. 4,108,467. This application May 12, 1977, Ser. No. 796,239

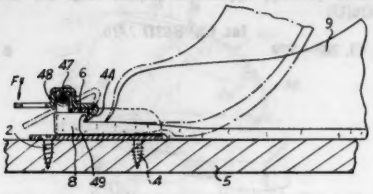
Claims priority, application France, Jul. 2, 1976, 76 20262; Nov. 16, 1976, 76 34449; Feb. 11, 1977, 77 03904; Mar. 8, 1977, 77 06692; May 3, 1977, 77 13355

Int. Cl.[3] **A63C** *9/00*

U.S. Cl. 280—615 **16 Claims**

5. A ski binding, especially of the touring or cross country type, in which the ski boot is held by a front extension of the

sole of the boot which engages itself in an archplate secured to the ski, said archplate having a stationary horizontally extending upper part and defining an area whose form corresponds in width and height to that of the extension of the sole, fastening means connected to the archplate and including a fastening



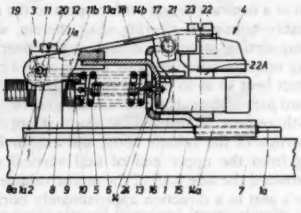
element movable downwardly from above said extension of the sole and engageable with an upwardly opening stop surface situated on an upper portion of the extension between the front of the archplate and the body of the boot to fasten the boot to the ski.

4,365,822

FRONT OR REAR JAW

Theodor Nitschko, and Franz K. Edinger, both of Vienna, Austria, assignors to TMC Corporation, Baar, Switzerland

Filed Sep. 12, 1980, Ser. No. 186,787
Claims priority, application Austria, Sep. 19, 1979, 6135/79
Int. Cl.³ A63C *9/08*
U.S. Cl. 280—625 **10 Claims**



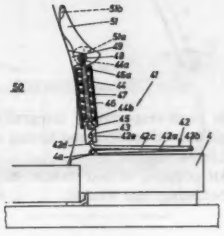
1. A front or rear jaw of a release ski binding, comprising:
elongated track means adapted to be fixedly secured to a ski;
upstanding abutment means at one end of said track means;
support means mounted on said track means for movement along the length thereof;
sole holder means mounted on said support means for movement between a ski boot holding position and a ski boot release position;
first resilient means for resiliently resisting a movement of said sole holder means from said ski boot holding position toward said ski boot release position;
second resilient means engaging and extending between said support means and said abutment means for resisting movement of said support means toward said abutment means; and
said first and second resilient means having oppositely directed active force directions whereby upon a movement of said support means toward said abutment means against said active force direction of said second resilient means the magnitude of force in the opposite active force direction of said first resilient means is reduced to thereby facilitate a movement of said sole holder means toward said ski boot release position with less resistance to said movement being provided by said first resilient means.

4,365,823

SAFETY-STRAPLIKE CONNECTING MEMBER

Heinz Wittmann, Vienna, Austria, assignor to TMC Corporation, Baar, Switzerland

Division of Ser. No. 31,493, Apr. 19, 1979, Pat. No. 4,312,519.
This application Mar. 12, 1981, Ser. No. 243,113
Claims priority, application Austria, Apr. 21, 1978, 2897/78
Int. Cl.³ A63C *9/00*
U.S. Cl. 280—637 **3 Claims**



1. A retaining device adapted for use with a ski having a ski binding mounted thereon releasably securing a ski shoe to the ski, said device comprising:
elongated connecting means having one end secured to said ski binding and having a first portion thereof remote from said one end located at a first location adjacent said ski boot;
a bearing part mounted to said ski boot;
a holding rod supported on said bearing part and extending downwardly therefrom;
a pair of hook-shaped parts pivotally supported on said holding rod adjacent the lower end thereof for movement between an open position spaced angularly from each other and a closed position adjacent each other, said hook-shaped parts being positioned at said first location and in secure gripping engagement with said first portion of said connecting means when said ski boot is releasably secured to said ski by said ski binding and said hook-shaped parts are in said closed position;
a hollow cylinder coaxially encircling said holding rod and having an open lower end, said cylinder being axially movable with respect to said holding rod between an elevated position in which the lower end of said cylinder is spaced above said hook-shaped parts and a depressed position in which the lower end of said cylinder surrounds said hook-shaped parts and maintains said hook-shaped parts in said closed position;
resilient means cooperable with said holding rod and said cylinder for continuously urging said cylinder upwardly relative to said holding rod; and
a lever pivotally supported on said bearing part and having a cam surface which engages the upper end of said cylinder, said cam surface effecting movement of said cylinder from said elevated position to said depressed position against the force of said resilient means in response to pivotal movement of said lever.

4,365,824

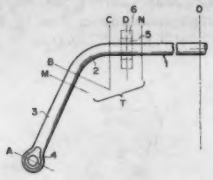
STABILIZER FOR VEHICLE

Akira Ohno; Toshiaki Sato, and Kanji Inoue, all of Yokohama, Japan, assignors to NHK Spring Co., Ltd., Yokohama, Japan

Filed Sep. 2, 1980, Ser. No. 183,387
Claims priority, application Japan, Sep. 7, 1979, 54-114974
Int. Cl.³ B60G *21/02*
U.S. Cl. 280—689 **6 Claims**

1. A stabilizer for a vehicle, the stabilizer being a single, one piece, unitary structure, comprising:
a torsion section coupled to the vehicle, said torsion section having opposite ends;

curved sections integrally extending from the respective opposite ends of said torsion section, said curved sections being heat treated to increase the mechanical strength of said curved sections; and



arm sections each respectively integrally extending from each of said curved sections and having a free end coupled to a vehicle suspension;

at least major portions of said torsion section and said arm sections not being heat treated.

4,365,825

VEHICLE, ESPECIALLY A CAB-OVER-ENGINE COMMERCIAL VEHICLE

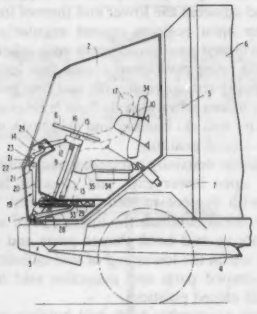
Josef Merkle, Esslingen, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Mar. 7, 1979, Ser. No. 18,332

Claims priority, application Fed. Rep. of Germany, Mar. 7, 1978, 2809664

Int. Cl.[3] **B62D** *1/18;* **B60R** *21/02*

U.S. Cl. 280—777 **39 Claims**



1. A vehicle having a steering assembly which includes a steering wheel and a steering column, the steering wheel being disposed substantially horizontally in a normal operating position and the steering column extending essentially vertically, characterized in that means are provided for automatically and positively displacing the steering wheel from the normal operating position into at least one passenger protective position as a function of at least one of a predetermined deceleration of the vehicle and a deformation of the front of the vehicle, said displacing means includes a locking means for locking the steering wheel in the normal operative position, means are provided for automatically releasing the locking means so as to enable the steering wheel to automatically shift to the protective position, a steering drive means is provided for mounting the steering assembly in the vehicle, the steering drive means includes a pair of rod means with one rod means forming an upper rod means and the other rod means forming a lower rod means, the upper rod means is articulated to a structural component of the vehicle substantially at a level of a dashboard means of the vehicle with the lower rod means being articulated in an area of one of a floor and frame of the vehicle.

4,365,826

STEERING COLUMN SUPPORTING STRUCTURE FOR MOTOR VEHICLE

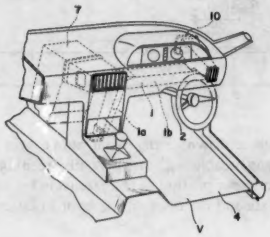
Toru Iriyama, Hiroshima, Japan, assignor to Toyo Kogyo Co., Ltd., Horishima, Japan

Filed Aug. 15, 1980, Ser. No. 178,631

Claims priority, application Japan, Aug. 21, 1979, 54-115470[U]

Int. Cl.[3] **B62D** *1/16*

U.S. Cl. 280—779 **8 Claims**



1. A steering column supporting structure for use in a motor vehicle including a dash panel constituting a front wall of a cab for the motor vehicle, a floor panel extending rearwardly from the lower edge of the dash panel to constitute a vehicle floor and having a floor tunnel portion extending in a longitudinal direction of the vehicle body at a central portion of the motor vehicle so as to be raised into the cab, an inner side panel extending from a front edge of a door opening at the side wall of the cab to a side edge of the dash panel and forming a closed cross sectional structure together with a hinge pillar outer panel, and a steering column provided in the forward portion of the cab at a central portion with respect to the driver's seat and rotatably housing a steering shaft therein, said steering column supporting structure comprising a steering column supporting member constituted by a long closed cross-section hollow duct bent so as to have a vertical portion provided in the forward part of the cab and extending generally perpendicularly with respect to the vehicle floor at approximately a central portion of the vehicle body, and a horizontal portion extending from the upper end of said vertical portion and laterally toward the side wall of the motor vehicle adjacent to the driver's seat in a direction approximately horizontal with respect to the vehicle floor, said vertical portion being rigidly connected, at its lower end, to said floor tunnel portion of said vehicle floor, said horizontal portion being rigidly connected, at its other end at the side wall of the motor vehicle adjacent to the driver's seat, to said inner side pannel, said steering column being fixed to approximately a central part of said horizontal portion for being supported thereat.

4,365,827

DRIVE WIRE FOR PASSIVE RESTRAINT SYSTEMS

Juichiro Takada, 3-12-1, Shinmachi, Setagayaku, Tokyo, Japan

Filed Mar. 13, 1981, Ser. No. 243,476

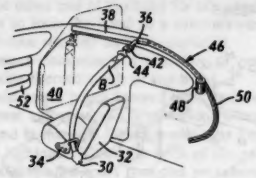
Claims priority, application Japan, Mar. 24, 1980, 55-037318[U]

Int. Cl.[3] **B60R** *21/10*

U.S. Cl. 280—804 **4 Claims**

1. In a passive vehicle occupant restraint belt system having a belt transfer member engaging a portion of a belt and driven by a drive wire along a guide rail between release and restraint locations, the improvement in the drive wire comprising (a) a length of racked wire adapted to be driven by a drive device and including a stranded wire core and a helically wound tooth wire; (b) a length of transfer wire having a stranded wire core and a covering of a durable polymeric material, the transfer wire being coupled to the belt transfer member and being no shorter than the distance along the guide rail between the

release and restraint positions, and (c) a butt splice connection between the racked wire and the transfer wire that includes a pressed-on metal collar adjacent the end of each stranded wire core, a band of polymeric material on each core adjacent the



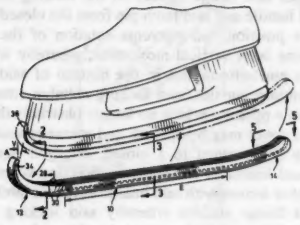
collar and a pressed-on coupling sleeve surrounding and joining the collars and also embracing the polymeric material bands, whereby concentrated stresses adjacent the collars are minimized.

4,365,828

SKATE GUARD

Bradley G. Hall; Gwendolyn L. Hall, both of 60 Redcar Ave., Islington, Ontario, Canada (M9B 1K1), and Valbory Grant, 1321 Redbank Cres., Oakville, Ontario, Canada

Filed Feb. 14, 1980, Ser. No. 121,455
Claims priority, application Canada, Feb. 21, 1979, 322040
Int. Cl.³ A63C *3/12*
U.S. Cl. 280—825 **23 Claims**



1. A skate guard shaped to extend longitudinally along the bottom edge of a skate blade,

said guard being shaped to define an upwardly opening groove running longitudinally therealong said groove being of a length to receive a skate blade,

said groove over a longitudinal extent before blade insertion narrowing toward its upper opening to a transverse dimension less than the thickness of a skate blade,

said guard being made of flexible resilient material whereby when a skate blade is inserted in said groove, the material of said guard is resiliently biased outwardly by said blade and bears inwardly thereon to grip it,

whereby said guard attaches to said blade without longitudinal stretching and wherein the inward pressure by the material on each side of said groove is the sole means of securing said guard to said skate,

means adjacent one end of said groove to prevent longitudinal movement therepast of the corresponding end of a skate blade inserted in said groove,

wherein said guard is shaped to define a bearing extent over a longitudinal extent of its lower surface,

said guard being shaped so that said bearing extent is concave downward in transverse cross section, defining spaced bearing ridges running longitudinally along said guard on each side of a concavity,

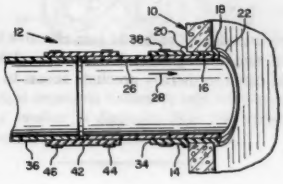
whereby under downward pressure of said guard on a supporting surface said spaced ridges cause the guard material on each side of said groove to press more firmly on said blade.

4,365,829

SEWER TAPPING APPARATUS

Dwight W. Fowler, 3865 SE. River Rd., Hillsboro, Oreg. 97123

Filed Sep. 4, 1979, Ser. No. 72,202
Int. Cl.³ F16L *3/04*
U.S. Cl. 285—162 **9 Claims**



1. A sewer tap for making connection to a main sewer line in the form of a substantially cylindrical pipe, said tap comprising:

a cylinder having a first and a second end, said cylinder being formed of elastomeric material and being smaller in diameter than said main sewer line,

said main sewer line having an aperture in the side thereof for receiving said first end of said elastomeric cylinder with said elastomeric cylinder extending outwardly away from the side of said main sewer line,

an interior branch pipe within said elastomeric cylinder having an exterior radius slightly larger than the interior radius of said aperture in said main sewer line minus the unstressed thickness of said elastomeric cylinder where the latter is received in said aperture in said main sewer line, said interior branch pipe extending into said aperture in said main sewer line for compressing said elastomeric cylinder against the inside edge of said aperture to form a seal and being held in compression within said elastomeric cylinder,

said branch pipe where it extends within said elastomeric cylinder having a substantially uniform outside diameter therealong to define the outside surface of a right circular cylinder, said elastomeric cylinder where it is received in said aperture and where it receives said branch pipe outwardly from the side of said sewer main having a substantially uniform inside diameter therealong to define the inside surface of a right circular cylinder for longitudinally receiving said branch pipe in sliding relation therewithin, adapting said branch pipe to be driven into said elastomeric cylinder to achieve predetermined sealing relation,

said branch pipe also extending outwardly from said second end of said cylinder, and further including a branch pipe extension joined to said branch pipe outwardly of said cylinder.

4,365,830

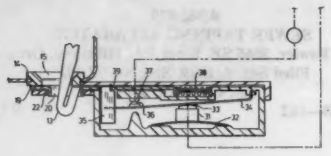
SAFETY LATCH FOR WASHER CLOSURE

Philip D. Paulson, Toronto, Canada, assignor to Inglis Limited, Mississauga, Canada

Filed Jun. 9, 1980, Ser. No. 157,465
Int. Cl.³ E05C *19/06*
U.S. Cl. 292—89 **19 Claims**

1. In an appliance for cleaning and treating clothes having a housing, a door and a closure for said door, said closure comprises means for impeding access to a handle portion for said door, a catch means for releasably securing said door shut and means for locking said catch means, said impediment means being manually movable to gain access to said handle where

such movement release said catch when unlocked, the arrangement being such that when said catch means is locked, move-



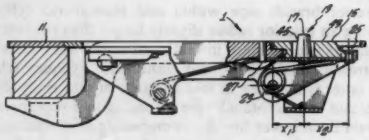
ment of said impediment means to gain effective handle access is prevented, said locking means having a time delay release for locking said catch to thereby preclude access to said handle.

4,365,831

CHANNEL LATCH

William R. Bourne, Anaheim, Calif., assignor to Hartwell Corporation, Placentia, Calif.

Filed Apr. 4, 1980, Ser. No. 137,555
Int. Cl.³ E05C 3/02
U.S. Cl. 292—229 **10 Claims**



1. A latch assembly comprising:

a latch bolt means adapted for pivotal movement about a fixed latch bolt pivot;

latch trigger means adapted for pivotal movement and between at least first and second preselected latch trigger means positions, about a fixed latch trigger pivot, said latch trigger means including a latch trigger means engagement means and said latch bolt means including a latch bolt means engagement means for engaging said latch trigger means engagement means, said latch trigger means engagement means adapted for engaging said latch bolt means engagement means when said latch trigger means is at said first latch trigger means predetermined position and for disengaging said latch bolt means engagement means at said second latch trigger means predetermined position;

a latch actuator assembly including a latch trigger actuator biasing means operatively linking said latch bolt means and said latch trigger means and being anchored at one end to said latch actuator assembly and which urges engagement of said latch bolt means and said latch trigger means;

a latch trigger means biasing means positioned about said fixed latch trigger pivot for urging said latch trigger means to assume said first latch trigger means predetermined position; and

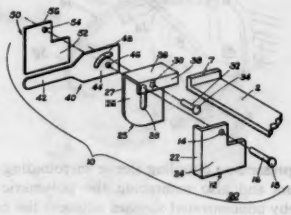
a reciprocable latch trigger actuator connected to said latch trigger actuator biasing means for opposing the urging of such biasing means and for disengaging said latch bolt means and said latch trigger means upon reciprocation thereof.

4,365,832

HOLD DOWN LATCH ASSEMBLY FOR HATCH COVERS

Marc A. Treppler, Florissant, Mo., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed Jan. 29, 1981, Ser. No. 229,377
Int. Cl.³ E05C 5/00
U.S. Cl. 292—256.5 **7 Claims**



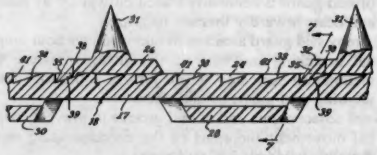
1. A hatch cover latch assembly comprising: a handle pivotably mounted about a mounting pin; said handle including an elongated latch slot; a locking member including an extension which in one position is located over and holds in place a hatch cover; a latch pin extending from said locking member into said elongated latch slot in the handle; a mounting pin slot provided in said locking member which receives said mounting pin; said mounting pin supported by a flange located adjacent to said latch which includes a flange surface which guides said locking member during vertical movement between open and closed positions; said locking member including a latch surface which engages said flange surface as the locking member is lifted by said handle and said latch pin from the closed position toward open position and prevents rotation of the locking member during such vertical movement, whereby when said handle pivot pin bottoms out in the bottom of said locking member mounting pin slot, said locking member rotates with said handle to a position which no longer obstructs the cover, whereby said cover may be opened; and whereby said locking member may be returned to a closed, engaged position by rotation of said handle in the opposite direction whereby said locking member moves with said handle until said latch surface engages said flange surface whereby said locking member descends vertically to a closed, engaged position with said cover.

4,365,833

SEALING DEVICE

Ralph G. Burnett, Kenosha, Wis., assignor to American Casting and Manufacturing Company, Plainview, N.Y.

Filed Apr. 2, 1980, Ser. No. 137,016
Int. Cl.³ B65D 33/34
U.S. Cl. 292—318 **8 Claims**



1. A sealing device for a receptacle having at least one open end, which receptacle consists at least in part of deformable material adjacent the open end thereof, so that the material may be gathered together to form a neck,

said sealing device comprising a relatively thin band of flexible material which is of sufficient strength that it is manually severable only by cutting through the same,

said band comprising an elongated, flat body portion and a pair of end portions at the extremities thereof,

a plurality of serrations formed on the side of the flat body portion of the band which faces the receptacle when secured thereto,

one end portion of the band being substantially flat,

means on the other end of the band for cooperating with said serrations to lock the band in a circumferentially closed position when secured to the receptacle,

said last means comprising a plurality of opposed panels forming slits therethrough of the band,

certain of said edges being formed with surfaces to conform with at least a portion of the serrations when the one end of the band is inserted through said slits and the band is manually tightened about the neck of the receptacle, and

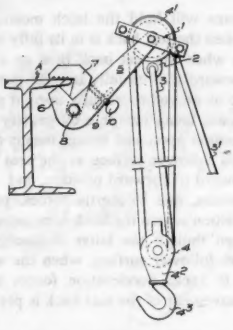
transverse and spaced apart rounded protuberances formed on the extremity of said other end of the band on the side thereof opposite the serrations to provide a sliding bearing surface for the band when secured to the receptacle and also providing a space thereafter for the insertion of a cutting tool to afford removal of the band from the receptacle without injury to the receptacle.

4,365,834

LIFTING TACKLE

William B. Parkinson, and Trevor Lamprell, both of Atherton, England, assignors to Lifting Gear Hire Limited, Manchester, England

Filed Nov. 24, 1980, Ser. No. 209,689
Int. Cl.³ B66D *3/00*
U.S. Cl. 294—85 **1 Claim**



1. A lifting tackle comprising a pulley block sheave, a hook sheave suspended therefrom, a pair of parallel arms supporting the pulley block sheave, the free ends of the arms being bent at right angles to form one member of a pair of gripping jaws, a member of L shape forming the second jaw of the pair, a spindle extending between the arms on which the L shaped jaw is pivoted to engage the upper surface of a flange of a girder, a support arm affixed to the parallel arms with a bolt screwed therethrough to form a stop for the L shaped jaw before or after attachment to the flange of the girder, the weight of the hook sheave and load depending from the block bringing the jaw integral with the arms into engagement with the opposite surface of the flange to grip the flange between the pair of jaws.

4,365,835

CONTOUR BOTTLE CARRIER

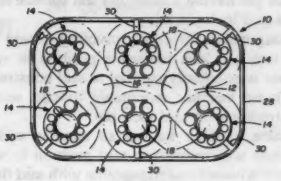
Albert G. B. Quelch, 5841 Melshire Dr., Dallas, Tex. 75230

Filed Aug. 11, 1980, Ser. No. 177,244
Int. Cl.³ B65D *71/00*
U.S. Cl. 294—87.2 **16 Claims**

1. A bottle carrier comprising:

a frame;

a plurality of predetermined openings within said frame defined by a plurality of substantially cylindrical segments adapted to releasably receive and retain a bottle by its neck, each of said openings including a wide portion and a narrow slot portion;



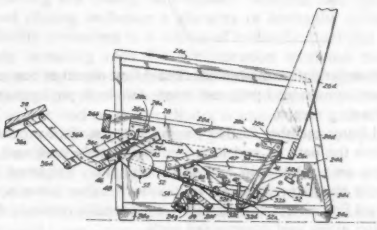
the cylindrical segments bounding said wide portion being relatively smaller in diameter than the cylindrical segments bounding said narrow slot portion.

4,365,836

MOTORIZED RECLINING CHAIR

William R. Jackson, Cleveland, Tenn.; Edwin G. Chambers; Albert J. Kraus, and Wesley E. Lerdon, all of Columbus, Ohio, assignors to Cleveland Chair Company, Cleveland, Tenn.

Filed Aug. 29, 1980, Ser. No. 182,815
Int. Cl.³ A47I *1/024*
U.S. Cl. 297—85 **71 Claims**



1. A motorized reclining chair comprising a stationary frame; a moveable seat/back occupant support; a leg rest; a pair of quadrilateral linkages, one on each side of the chair; each of said quadrilateral linkages having a first link rigidly secured to said stationary frame, a second link rigidly secured to said moveable seat/back occupant support, and third and fourth links both connected between said first and second links; a pair of leg rest extender linkage means, one on each side of the chair, each connected between the second link of a respective quadrilateral linkage and said leg rest; a first support secured to said leg rest extender linkage means; a second support secured to said stationary frame below said moveable seat/back occupant support; shaft means extended between said first and second supports; and a manually actuatable motor for driving said shaft means to increase the distance between said first and second supports for placing the chair in a reclining condition.

4,365,837

INERTIAL LOCK

Ned W. Mizelle, Lexington, Ky., assignor to Hoover Universal, Inc., Saline, Mich.

Filed Mar. 5, 1981, Ser. No. 240,773
Int. Cl.³ B60R *21/10*; B60N *1/02*
U.S. Cl. 297—216 **8 Claims**

1. An inertial lock mechanism for preventing relative movement between a first object and an adjacent second object over

which said first object is normally movable in a constrained path, said mechanism comprising:

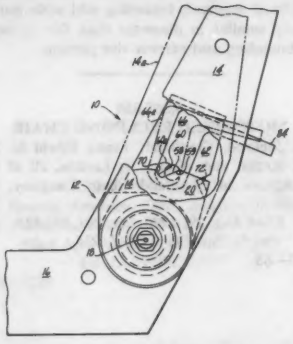
(a) a lock pin pivotally mountable to said first object for pivotal movement about an axis perpendicular to said constrained path,

said lock pin having a generally flat surface in a plane parallel to said lock pin axis;

(b) biasing means for urging pivoting of said lock pin about said lock pin axis toward a position in which said flat surface is essentially parallel to said constrained path; and

(c) a frame member mountable to said second object in registration with said lock pin,

said frame member having an angular surface angularly disposed with respect to said position to which said flat surface is biased and engageable with said flat surface so as



to stop relative movement of said first object at one end of said constrained path and rotate said lock pin against said biasting means,

said frame member further having a stop surface protruding into the path of said lock pin, engageable with said lock pin only when said lock pin is angularly displaced from said biased position, so as to stop relative movement of said first object in a second and essentially opposite direction along said constrained path,

said stop surface and said angular surface being sufficiently spaced apart so as to permit said biasing means to overcome inertia and pivot said lock pin out of engageable relationship with said stop surface except when a predetermined amount of acceleration of said first object causes rapid movement of said lock pin from said angular surface to said stop surface.

4,365,838

INERTIA SEAT BACK LOCK

Alan D. Berg, Oxford, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 31, 1980, Ser. No. 202,493

Int. Cl.³ B60N *1/02*

U.S. Cl. 297—379 **4 Claims**

1. A seat assembly for an automotive vehicle comprising:

a seat which is adapted to be mounted to vehicle structure,

a seat back which is pivotally supported for movement between a fully upright position and a forward position in which it generally overlies said seat,

said seat back having a striker means extending transversely of its side which is movable in unison with the back rest through a given arcuate path,

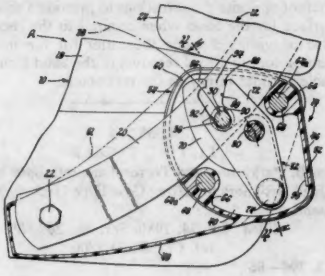
an inertia responsive latch means pivotally supported intermediate its ends for movement in opposite directions,

said latch means having a latch at one end and first and second cam follower surfaces spaced from said latch and respectively defining with said latch a slot means having first and second slot portions, said second slot portion extending at an obtuse included angle with said first slot portion,

said latch means being gravity biased toward an unlatched position in which said latch is out of the path of movement of the striker means,

said striker means sequentially engaging said first cam follower surface and then said second cam follower surface of said latch means to respectively cam and hold the latter against its gravity bias in a latched position in which the latch is disposed within the path of movement of the striker means when the seat back is returned to an upright position,

said second cam follower surface extending along the path of movement of said striker means an extent such that the



striker means will hold the latch means in its latched position when the seat back is in its fully upright position as well as when the seat back is in an upright position slightly forwardly of its fully upright position due to an inability to be moved to its fully upright position,

said latch means being movable by gravity toward its unlatched position upon said striker means disengaging the second cam follower surface as the seat back is slowly pivoted toward its forward position, and

said latch means, due to inertia forces, remaining in its latched position where the latch is engaged by the striker means, even though the latter is disengaged from the second cam follower surface, when the seat assembly is subjected to rapid deceleration forces so that further forward movement of the seat back is prevented.

4,365,839

CHAIR CONSTRUCTION WITH PROTECTIVE CUSHIONING FOR EXPOSED STRUCTURAL PROJECTIONS

Alex Strassle, Kirchberg, Switzerland, assignor to Intercollection Development SA, Kirchberg, Switzerland

Filed Oct. 18, 1977, Ser. No. 843,303

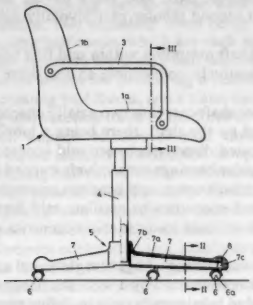
Claims priority, application Switzerland, Jul. 11, 1977, 8531/77

Int. Cl.³ A47C *7/54*; A47B *91/00*

U.S. Cl. 297—411 **4 Claims**

1. A chair construction including a seating member, armrests, a plurality of radially oriented foot projections, and a support column connecting the foot projections to the seating member, characterized in that the armrests and foot projections comprise U-shaped members stamped and formed from

sheet metal, all of the portions of said armrests and foot projections which are exposed after assembly of said chair construc-



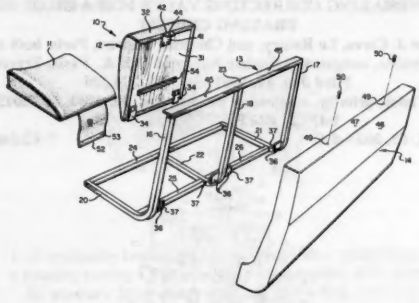
tion being completely, permanently and unremovably encased prior to said assembly with a layer of soft elastic material.

4,365,840

SEAT WITH BACK CUSHION ATTACHMENT

Norman J. Kehl, Elk Grove Village, and Richard C. Magnuson, Island Lake, both of Ill., assignors to Coach & Car Equipment Corporation, Elk Grove Village, Ill.

Filed Oct. 30, 1980, Ser. No. 202,051
Int. Cl.³ A47C *4/02*
U.S. Cl. 297—443 **7 Claims**



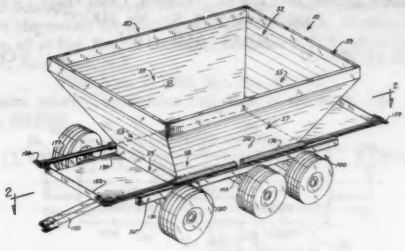
1. A seat comprising:
a frame including a pair of spaced-apart vertically extending members and an immovable upper cross member extending between the upper parts of said vertically extending members;
a back cushion having a front surface portion, a rigid rear member and a top surface portion extending rearwardly from said front surface portion and terminating at said rear member;
a pair of spaced-apart clips adjacent the bottom of said rear member, each of said clips depending from said rear member and terminating at a free end;
and a pair of spaced apart tabs located adjacent the bottom of one of said vertically extending frame members;
each of said clips comprising means for hookingly engaging one of said tabs from above and for mounting said back cushion for essentially pivotal movement about said tabs between a relatively forwardly inclined first position and a relatively upright second position;
each of said clips being composed of resilient, springable material;
each of said tabs being composed of rigid material;
each clip comprising means for gripping a respective tab when said back cushion is in its upright position.

4,365,841

GRAVITY DUMP WAGON

Bruce I. McLaughlin, Glidden, Iowa, assignor to Scranton Manufacturing Co., Inc., Scranton, Iowa

Filed Apr. 18, 1980, Ser. No. 141,368
Int. Cl.³ B60P *1/56*
U.S. Cl. 298—27 **1 Claim**



1. A gravity dumping utility wagon having an open wagon body mounted on a framework which is comprised of a plurality of horizontally disposed, elongated beams, said framework being supported by a plurality of wheels, comprising:
a plurality of closure members slideably disposed in a horizontal plane below said framework, said closure members being operatively connected to a means for horizontally opening and closing said closure members; said opening and closing including a plurality of hydraulic cylinders fluidly connected to a source of hydraulic fluid and having actuating rods for reciprocation mounted therein extending from one end of said cylinders; said plurality of hydraulic cylinders being disposed in opposite pairs such that one end of each cylinder is attached to said framework while each said actuating rod is attached to a portion of a closure member;
a plurality of substantially equa-length axles, and a pivotal means for pivotally rotating a front axle of said plurality of axles in perpendicular, horizontal and vertical planes; said pivotal means comprising:
a first rectangular plate, horizontally disposed in the front of said wagon, and secured beneath said horizontally disposed beams;
a second rectangular plate including a plurality of downwardly disposed apertured flanges positioned at its forward and rearward ends, said apertured flanges including a pivot pin aperture disposed in axial alignment between said flanges; said second plate further comprising a plurality of downwardly disposed stabilizing flanges positioned at its sides;
securing means for rotatably securing said second plate beneath said first plate, said securing means comprising a vertical journal post secured at the midpoint of said second plate, a journal aperture disposed in the center of said first plate and a means for securing said journal post within said journal aperture; and
a vertical pivot means for pivotally securing said second rectangular plate to said front axle; said vertical pivot means comprising:
a plurality of bearing flanges disposed at the midpoint of said front axle, on the forward and rearward sides thereof, and including bearing apertures centrally disposed above said front axle and in corresponding axle alignment between said bearing flanges;
a plurality of cylindrcial pivot bearings, a first pivot being disposed on the forward side of said forward bearing flange, a second pivot bearing disposed at the rearward side of said rearward bearing flange, said first and second bearings disposed in axial alignment with said bearing apertures; and

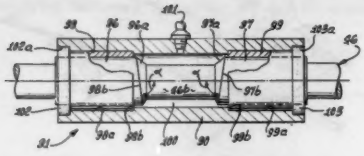
a pivot pin pivotally secured through said pivot pin apertures, said bearing apertures and said pivot bearings.

4,365,842

LUBRICANT PUMPING ECCENTRIC IN FLOOR STRIPPING MACHINE

Palmer Grasse, 1407 Lee Dr., Glendale, Calif. 91201

Filed Nov. 6, 1981, Ser. No. 318,827
Int. Cl.³ A47L *11/12*
U.S. Cl. 299—37 **9 Claims**



1. For use in power-operated floor stripping apparatus that includes a frame, a drive carried on the frame, wheels supporting the frame, a handle to guide the frame, and a cutting blade carried by a head which is pivotally mounted to the frame, the improvement comprising

(a) a connecting element having a first tubular part and a second tubular part, said parts having spaced, parallel axes, said second tubular part pivotally connected to the head,

(b) a drive shaft extending within said first tubular part, said shaft operatively connected to the drive to be rotated thereby,

(c) said drive shaft carrying two axially spaced eccentrics to be rotated by the shaft, there being a lubricant receiving space located directly between said eccentrics,

(d) and two annular bearings respectively carried by and within said first tubular part, said bearings respectively receiving said spaced eccentrics to oscillate said first tubular part, said head and said blade as said eccentrics are rotated by the shaft,

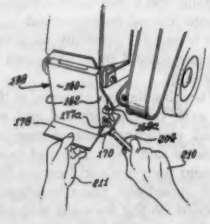
(e) said eccentrics having oppositely facing end faces which flare radially outwardly and axially away from said space, to urge and guide lubricant toward said bearings.

4,365,843

BLADE HOLDER IN OSCILLATED HEAD FOR FLOOR STRIPPING MACHINE

Palmer Grasse, 1407 Lee Dr., Glendale, Calif. 91201

Continuation-in-part of Ser. No. 318,827, Nov. 6, 1981. This application Dec. 10, 1981, Ser. No. 329,523
Int. Cl.³ A47L *11/12*
U.S. Cl. 299—37 **10 Claims**



1. For use in power-operated floor stripping apparatus that includes a frame, a drive carried on the frame, wheels supporting the frame, a handle to guide the frame, and a cutting blade carried by a head which is pivotally mounted to the frame, the improvement comprising

(a) a connecting element, having a first tubular part and a second tubular part, said parts having spaced, parallel axes, said second tubular part pivotally connected to the head,

(b) a drive shaft extending within said first tubular part, said shaft operatively connectible to the drive to be rotated thereby,

(c) said drive shaft carrying two axially spaced eccentrics to be rotated by the shaft, there being a lubricant receiving space located directly between said eccentrics,

(d) two annular bearings respectively carried by and within said first tubular part, said bearings respectively receiving said spaced eccentrics to oscillate said first tubular part, said head and said blade as said eccentrics are rotated by the shaft,

(e) said head consisting of lightweight metal and having two flanges interconnected by a web, the flanges being locally thickened to substantial extent to define two lugs forming bearing openings for a pivot shaft connected to the frame,

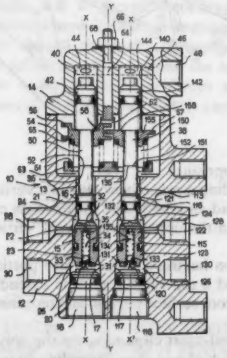
(f) and a blade holder plate attached to the head at the bottom side thereof, two shafts extending parallel to said head web and through said head flanges to provide shaft projections exteriorly of said flanges, and fasteners extending through said holder plate and having threaded shanks in threaded engagement with threaded openings in said shaft projections, the fasteners having heads below said holder plate to be rotated for clamping the blade between the plate and the head bottom side.

4,365,844

BRAKING CORRECTING VALVE FOR A DUAL BRAKING CIRCUIT

Jean J. Carre, Le Raincy, and Christian Riquart, Paris, both of France, assignors to Societe Anonyme D.B.A., Paris, France

Filed Jan. 19, 1981, Ser. No. 226,309
Claims priority, application France, Jan. 30, 1980, 80 02015
Int. Cl.³ B60T *8/26, 11/34, 17/18*
U.S. Cl. 303—6 C **7 Claims**



1. A braking correcting valve for a motor vehicle dual braking circuit comprising: a body, two parallel bores in said body defining between them an axis of symmetry, each of said bores communicating with a corresponding inlet port and outlet port, two pistons slidable in said bores, controlling the flow of a pressure fluid between one of said inlet ports and the outlet port corresponding thereto, each of said pistons having an end portion which projects outwardly of said body, and a distributor assembly which is capable of generating, from an actuating force, two pilot forces acting on said end portions to urge the pistons inwardly of the body in the direction of establishing said flow of fluid, said pressure fluid urging the pistons out-

wardly of the body in the direction of interrupting the flow of fluid, characterized in that said distributor assembly comprises: a cover which is fixed with respect to said body, two thrust members which are slidable in said cover parallel to said pistons and capable of coming into abutment with the end portions of said pistons, said actuating force being divided into two equal actuating half-forces which are each applied to one of the two thrust members for urging said pistons inwardly of said body, resilient means for producing a reaction force opposed to said actuating half-forces, and a transmission assembly for distributing said reaction force in the form of two reaction half-forces each applied to one of said thrust members, whereby each thrust member is subjected to opposite forces defining an actuating half-force, and a reaction half-force, the resultant of which constitutes said pilot force, said transmission assembly comprising two transmission elements which are fixed with respect to each of said thrust members, one of said transmission elements comprising two axially separated radial projections and the other said transmission elements comprising a radial projection which projects between the radial projections of the first transmission element and being capable of coming into engagement with one of said two radial projections when the relative axial displacement between the two pistons exceeds a predetermined value.

4,365,845

HYDRAULIC BRAKE PRESSURE CONTROL VALVE

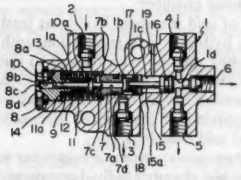
Masami Aono, Yokohama, Japan, assignor to Tokico Ltd., Kawasaki, Japan

Continuation of Ser. No. 87,298, Oct. 22, 1979, abandoned. This application Oct. 2, 1981, Ser. No. 308,174

Claims priority, application Japan, Oct. 20, 1978, 53-144213

Int. Cl.³ B60T *8/26*

U.S. Cl. 303—6 C **2 Claims**



1. A hydraulic brake pressure control valve comprising:

a housing having a first inlet for being supplied with hydraulic pressure fluid under pressure and a first outlet and a second inlet for being supplied with hydraulic pressure fluid under pressure;

a valve piston slidably disposed in said housing and having a passage therethrough connecting said first inlet and said first outlet;

an actuating piston slidably disposed in said housing for being acted on by the hydraulic pressure fluid from said second inlet and having a rod extending therefrom and abutting said valve piston for urging the valve piston toward said first inlet under the pressure of the hydraulic pressure fluid acting on said actuating piston;

a first spring urging said valve piston toward said actuating piston and preventing movement of said valve piston at pressures less than a pressure P_1;

a valve seat on said valve piston at the end of the passage opening toward said first inlet;

said housing further having a bore therein, one end of said bore opening to the atmosphere and the other end being exposed to the pressure of the hydraulic pressure fluid from said inlet;

a valve body being slidably and sealingly mounted in said bore and projecting out of the other end of said bore and cooperating with said valve seat;

a second spring engaged with said valve body and urging said valve body toward said valve seat and preventing movement of said valve body at pressures less than pressure P_2 which is greater than pressure P_1; and

a retainer normally retaining said valve body at a predetermined position in the housing.

4,365,846

DUAL-CIRCUIT PRESSURE CONTROL VALVE FOR HYDRAULIC BRAKE SYSTEMS

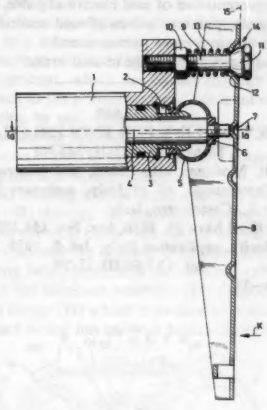
Bernd Schopper, Hattersheim; Peter Tandler, Falkenstein; Herbert Hartmann, Wiesbaden, and Manfred Reuter, Weilmuenster, all of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Mar. 2, 1981, Ser. No. 239,732

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1980, 3012765

Int. Cl.³ B60T *17/00*

U.S. Cl. 303—56 **9 Claims**



1. A dual-circuit pressure control valve for hydraulic brake systems comprising:

a housing;

two control pistons disposed in said housing in a parallel side-by-side relationship, each of said two pistons being assigned to a different one of two brake circuits and loaded by a single common, adjustable preloading force; and

a lever having a longitudinal axis supported in a mount fastened to said housing acting on each of said control pistons to distribute said preloading force evenly thereto, said lever being tiltable about an axis parallel to said two pistons and about said longitudinal axis, said lever bearing against said mount at at least one support point disposed approximately in said longitudinal axis.

4,365,847

PROCESS AND DEVICE FOR BRAKING A WHEEL BY INTEGRATED PRESSURE PULSES

Henri Martin, Saint Nazaire, France, assignor to Societe Nationale Industrielle Aerospatiale, Paris, France

Filed Mar. 13, 1981, Ser. No. 243,347

Claims priority, application France, Mar. 25, 1980, 80 06576

Int. Cl.³ B60T *8/00*

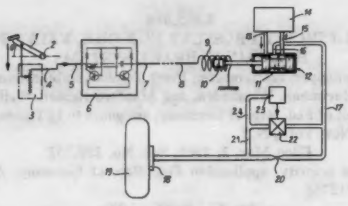
U.S. Cl. 303—93 **15 Claims**

1. A process for braking a wheel, particularly of an aircraft taxiing on the ground, by means of a brake supplied with fluid under pressure from a source under stable pressure, and via a control member actuated voluntarily, said process comprising the steps of:

converting the actuation of said control member into a first temporal sequence of electrical pulses at constant fre-

quency, such that the duration of each of them is a function of the instantaneous amplitude of said actuation,

converting said first sequence of pulses into a corresponding second temporal sequence of fluid pressure pulses, such



that with each electrical pulse is associated a pressure pulse representative of said electrical pulse,

integrating the pressure pulses of said second sequence in order to obtain a mean pressure, and

applying said means pressure to said brake.

4,365,848

CONNECTION LINK FOR ENDLESS CHAINS OF TRACKED EQUIPMENT

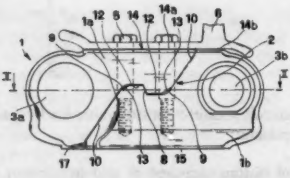
Walter Grilli, Modena; Aldo Crotti, and Giuseppe Barchetti, both of Castelnuovo, all of Italy, assignors to Italtractor I.T.M. S.p.A., Castelvetro, Italy

Filed May 28, 1980, Ser. No. 154,100

Claims priority, application Italy, Jul. 9, 1979, 28976/79[U]

Int. Cl.³ B62D *55/28*

U.S. Cl. 305—54 **19 Claims**



1. An endless chain connection link for tracked equipment, of the type comprising first and second mutually complementary link portions, each of said link portions including a bushing seat adapted to connect a plurality of said links together into a chain, said link portions of said connection link being separated by a parting line along only part of which the two link portions are in contact, each of said link portions comprising a single tooth and a single space arranged thereon in such a way that the tooth of one portion is contained in the space of the other portion in the assembled together condition of said link portions, said connection link comprising a shoe and screw means, the two link portions being connected to each other by said screw means which also secure said shoe to the connection link, characterized in that: said link has a median longitudinal plane containing the axes of said seats, each link portion tooth being defined by a pair of side surfaces (10) and (8) and a land (12) therebetween, the contact between said link portions occuring only on said side surfaces (10) and (8) of the tooth, the contact between the two side surfaces (8) of the teeth occurring along a common contact surface which intersects said median longitudinal plane; and said common contacting surface defining a straight line which is approximately equidistant from the axes of said seats, which is symmetrical relative to said median plane, which is at an angle with respect to said median plane so as to form obtuse angles with said lands (12) and which is approximately perpendicular to the tractive force exerted on said link portions when the assembled link is placed in use in a chain on a piece of tracked equipment.

4,365,849

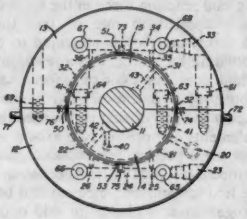
HYDRODYNAMIC SHAFT BEARING WITH CONCENTRIC OUTER HYDROSTATIC SQUEEZE FILM BEARING

John D. Halloran, East Amherst, N.Y., assignor to Joy Manufacturing Company, Pittsburgh, Pa.

Filed Feb. 19, 1981, Ser. No. 235,372

Int. Cl.³ F16C *7/04, 35/00*

U.S. Cl. 308—9 **9 Claims**



1. An inner elongated cylindrical bearing member having a central axially extending through bore therein for rotatably supporting a shaft in hydrodynamic relationship;

an outer elongated bearing member having a central axially extending through bore axially encompassing said inner bearing member with the inner surface of said outer bearing member being radially spaced from the outer surface of said inner bearing member to form a chamber therebetween;

said bores having generally coincident central axis;

sealing means cooperable with said bearing members in axially spaced relationship whereby said chamber is a closed volume chamber;

at least one of said members having at least three pockets therein in hydraulic communication with said chamber and extending radially with respect to said chamber and are equiangularly spaced with respect to said central axis;

said outer member having first passageway means therein to permit supplying of pressurized hydraulic fluid to said pocket and said chamber;

and second passageway means in said inner bearing member for placing said chamber in fluid communication with said bore of said inner bearing member establishing a hydraulic fluid flow path from such chamber to said bore in said inner bearing member whereby a path is formed for pressurized hydraulic fluid to enter said pockets through said first passageway and to flow through said chamber to form a hydrostatic bearing for supporting said inner member and to flow from said pockets to said second passageway and to flow through said second passageway to said bore of said inner bearing to form a hydrodynamic bearing for supporting such shaft.

4,365,850

CLUTCH THRUST BEARING UNIT WITH GUIDED ELASTIC SELF-ALIGNMENT

Daniel Perrichot, Guyancourt, and Maurice Faurie, Alfortville, both of France, assignors to SKF Compagnie d'Applications Mecaniques, Clamart, France

Filed Jan. 28, 1981, Ser. No. 229,234

Claims priority, application France, Feb. 1, 1980, 80 02278

Int. Cl.³ F16C *19/10*

U.S. Cl. 308—26 **9 Claims**

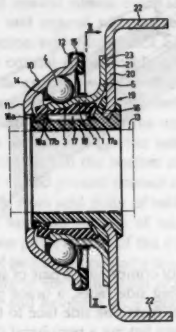
1. A guided self-aligning clutch release bearing mountable on a guide tube in a clutch assembly, comprising:

an anti-friction bearing with rolling parts;

an outer bearing-race ring and an inner bearing-race ring slidably axially with respect to the guide tube, one of said bearing-race rings having a first radial flange having two diametrically opposite radial extensions;

an elastic sleeve on the interior of said inner bearing-race ring, having a plurality of resilient internal projections substantially parallel to the bearing center line, sloping relative to the radial direction;

a rigid guide socket having at least a portion thereof lying radially inwardly of the inner bearing-race ring and in direct slidable contact with the guide tube, said portion being also in direct external contact with said resilient projections, said guide socket having a second radial flange in frictional guiding contact with the first radial flange of said one bearing-race ring,



said internal projections of said elastic sleeve comprising means for permitting radial movement of said inner bearing-race ring and for restoring said inner bearing-race ring to concentric relation with the portion of said guide socket which is contacted by said projections, and

at least one stop means protruding axially in the direction of the bearing and adapted to contact one of said radial extensions upon rotation of said one bearing-race ring, said stop means being disposed where it will not jam the movement of the radial flange toward the stop means.

4,365,851

LUBRICANT RECIRCULATION SYSTEM FOR THE BEARING OF A ROTATING SHAFT

Helmut Andres, Kiel; Karl-Heinz Fichtner, Strande, and Hans-Siegfried Fisher, Kiel, all of Fed. Rep. of Germany, assignors to Anschutz & Co., GmbH, Kiel-Wik, Fed. Rep. of Germany

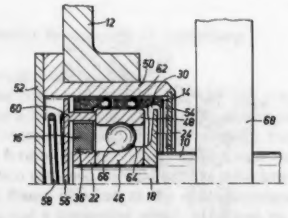
PCT No. PCT/DE79/00146, § 371 Date Aug. 15, 1980, § 102(e) Date Jul. 22, 1980, PCT Pub. No. WO80/01304, PCT Pub. Date Jun. 26, 1980

PCT Filed Dec. 14, 1979, Ser. No. 204,363

Claims priority, application Fed. Rep. of Germany, Dec. 15, 1978, 2854298

Int. Cl.³ F16C *33/66*

U.S. Cl. 308—187 **8 Claims**



1. A lubricant recirculation system for a bearing of a rotating shaft (10, 18) having

a lubricating surface rotating with the shaft;

a slinger disk (24, 26) adjoining the surface rotating with the shaft;

a lubricant reservoir (14, 16) comprising porous material at least in part surrounding the circumference of the slinger disk;

and means for returning the lubricant from the reservoir to the bearing surface,

wherein, the means for returning the lubricant from the reservoir to the bearing surface includes a surface formed on said porous material lubricant reservoir (14, 16) in alignment with a surface rotating with the shaft and axially adjoining the bearing surface, said surface on the porous material lubricant reservoir being spaced from the bearing (20-24) rotating with the shaft (10, 18) and defining a slot (36) therebetween, so that said slot (36) will be bounded on one side by a surface (32) axially adjoining the bearing surface rotating with the shaft and on the other side by a porous surface of the porous material lubricant reservoir (14, 16);

said slot (36) forming, upon rotation of the shaft, a pumping chamber of a dynamic pump transporting lubricant from the reservoir to said bearing part, the slinger disk supplying the lubricant, which has passed through the bearing (20-24) back to the porous material lubricant reservoir, for recirculation by said dynamic pump;

wherein the bearing is a ball bearing

and the porous lubricant reservoir (14) is shaped as a cage bounding the slot on the outside and

the cage (14) forming the lubricant reservoir includes guiding balls (62) therein, the lubricant reservoir cage being located between the outer race (48) of the ball bearing, on the shaft (10) and the housing (12), the inner race of the ball bearing being positioned on the shaft (10)

and wherein the lubricant reservoir (14) shaped as the cage (14) has a flange (16) which is located adjacent to said ball bearing and which has an inner surface delimiting the slot (36).

4,365,852

SNAP CAGE OF PLASTIC MATERIAL FOR BALL BEARINGS

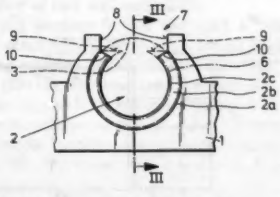
Rudolf Fingerle, Esslingen, Fed. Rep. of Germany, assignor to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Dec. 19, 1980, Ser. No. 218,111

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1979, 2552252

Int. Cl.³ F16C *33/38*

U.S. Cl. 308—201 **2 Claims**



1. A plastic snap cage for ball bearings, comprising an annular ring having a plurality of pockets for receiving a ball therein, uniformly spaced about the periphery thereof, each of said pockets having an opening formed at one front edge of said ring limited by planar surfaces extending parallel and symmetrically to a radial line across the entire width of the cage and defining the inside width of the pocket opening, each of said pockets being provided in the radial direction with a cylindrical first section conforming to the diameter of the ball and open towards the outer circumference of the cage, an adjacent conically tapering section forming a bearing surface for the ball, and adjacent to the latter a cylindrical, axially

short third section, said pocket opening having surface wall sections extending in depth in a radial plane to the first cylindrical section up to the inside width of said first cylindrical section.

4,365,853

ARTICLE FOR STORING AND DISPENSING DETERGENT COMPOSITIONS UTILIZING SEPARATE TABLETS OF COMPONENTS

Robert L. Ehrlich, Wyckoff, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Division of Ser. No. 722,988, Sep. 13, 1976, Pat. No. 4,099,912, which is a continuation of Ser. No. 470,258, May 15, 1974, abandoned. This application Jun. 30, 1978, Ser. No. 920,936

Int. Cl.³ B65D *83/04*

U.S. Cl. 312—42 **3 Claims**

1. A dispensing article for dispensing a detergent composition in the form of a plurality of separate units of at least two different detergent composition components as selected by the operator to produce an efficient washing composition for the type of laundry being washed in the washing machine which comprises a holder which holds from 2 to 10 receptacles for storing and dispensing a plurality of separate units of the detergent composition components with units of only one detergent composition component being present in each receptacle, each said receptacle being a vertical tube having a filling opening at the top, retaining means at the bottom, viewing openings or a transparent section therein through which the unit contents of the receptacle may be viewed, wall sections at the lower end of the tube defining an opening through which units can be removed transversely, one by one, as desired and being sized to dispense units each having a weight of 5 to 30 grams, a volume of 4 to 20 milliliters and a density of 0.8 to 2 g./ml; means on a wall of each receptacle for attachment of said receptacle to said holder; said means being adapted to be readily removable from said holder; and means for fastening the holder to a wall or to a washing machine in a convenient location for dispensing.

4,365,854

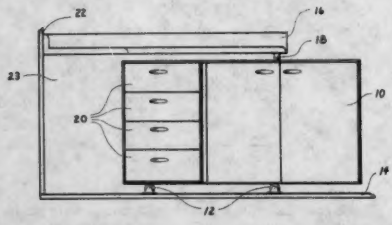
CABINET CONSTRUCTION

Gary G. Waller, 818 Sommerville St., Shakopee, Minn. 55379

Filed Aug. 25, 1980, Ser. No. 180,940

Int. Cl.³ A47B *53/00, 91/00*

U.S. Cl. 312—250 **2 Claims**



1. A cabinet construction which comprises a fixed cabinet, a cabinet movable parallel to its facing which is adjacent and perpendicular to the fixed cabinet so at a retracted position a portion of the facing of the movable cabinet abuts one end of the fixed cabinet, and at an extended position, the facing of the movable cabinet is accessible, further comprising a countertop and a roller mounted on the underside of the countertop to support the countertop by bearing upon the top of the movable cabinet.

4,365,855

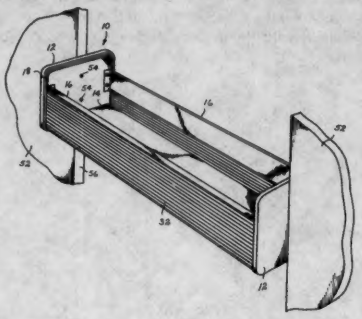
STORAGE FACILITY SUCH AS A FILE HAVING A FLEXIBLE ROTATABLE COVER

Edward H. Mark, U.S. 31 North, Niles, Mich. 49120

Filed May 19, 1980, Ser. No. 150,716

Int. Cl.³ E06B *9/14*

U.S. Cl. 312—297 **3 Claims**



1. A storage facility comprising a pair of spaced parallel end plates having opposing side faces, a brace part extending between said end plates from one side face to the other side face thereof, each end plate having a peripheral continuous groove formed in its side face circumscribing said brace part at the end plate, a flexible cover extending between said end plates and including peripheral edges each fitted within a said peripheral groove, means for connecting said end plates to a vertical support whereby the storage facility will be suspended for use, each peripheral groove constituting guide means wherein said cover can be rotated about said brace part into various operative positions, said cover constituting at least two sides of said storage facility in all operative positions of the cover, each end plate including an end edge, said means for connecting said end plates including a slot formed in each plate at its side face paralleling said plate end edge, a bore extending from said plate end edge to said slot, catch means for supporting engagement with said vertical support, a threaded screw connecting said catch means to said end plate at its end edge and extending through said bore into said slot, a nut turned onto said screw within said slot in compression with said end plate to secure the screw within said bore.

4,365,856

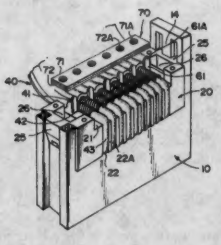
ELECTRIC CONNECTOR FOR COAXIAL RIBBON CABLE

Hirokatsu Yaegashi, and Shinichi Watanabe, both of Ohsaki, Japan, assignors to Hirose Electric Co., Ltd., Tokyo, Japan

Filed Jul. 9, 1980, Ser. No. 166,993

Int. Cl.³ H01R *4/66*

U.S. Cl. 339—14 R **5 Claims**



1. An electric connector for coaxial ribbon cable comprising

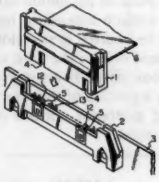
a guide block for positioning one end of a coaxial ribbon cable to be terminated, a cable clamp coupled to the guide block for clamping the coaxial ribbon cable and a housing having the body of a ground contact disposed in the center thereof and at least one signal contact disposed therein on at least one side of the body of the ground contact, said ground contact being provided with a predetermined number of contacting sections, said contacting sections being located in the same line as said signal contacts are arranged, whereby the top ends of said ground contact and said signal contacts can be terminated to the outer conductors and the inner conductors respectively, of the one end of said coaxial ribbon cable as positioned in said guide block when said coaxial ribbon cable is terminated to said electric connector, said guide block being formed so that the one end of the coaxial ribbon cable is wrapped about the guide block, with the exposed outer conductors of the one end of the coaxial ribbon cable being positioned in the top surface of the guide block and the portion of the one end of the coaxial ribbon cable from which at least the outer conductors are removed being positioned in the bottom surface of the guide block, said top end of said ground contact comprising a plurality of legs extending from said body of said ground contact to about the level of said top surface of said guide block and arranged at the same pitch as that of the coaxial ribbon cable, and said top ends of said signal contacts comprising a terminating section extending to about the level of said bottom surface of said guide block and having a wire receiving slot.

4,365,857

CONNECTOR HAVING POLARITY

Kouji Watanabe, Yokohama, and Hiroshi Tokudome, Kawasaki, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 29, 1980, Ser. No. 182,669
Claims priority, application Japan, Aug. 31, 1979, 54-110213
Int. Cl.³ H01R *13/645*
U.S. Cl. 339—17 C **14 Claims**



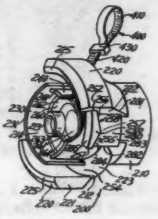
1. A connector having polarity comprising:
a jack;
a plug having a side wall; and
at least one polar key element, wherein said polar key element has a handle plate, a frame, two connecting bridges which connect said handle plate and said frame, a thin portion formed on each of said bridges near the connecting portion with said frame, a bar-like polar key supported on said frame adjacent to the space between said two bridges, and a projection which is formed on the upper end of said bar-like polar key and projects upward therefrom; and wherein the side wall of said plug is inserted between said bar-like polar key and said frame for positioning said polar key element thereon.

4,365,858

MOLDED PROTECTION CAP

James J. Karol, Unadilla, N.Y., assignor to The Bendix Corporation, Southfield, Mich.

Filed Mar. 3, 1981, Ser. No. 239,956
Int. Cl.³ H01R *13/44*
U.S. Cl. 339—36 **7 Claims**

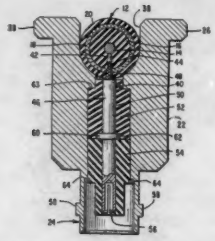


1. A molded protection cap (200) for an assembly of the type including an electrical cable (50) joined in electrical circuit relationship to a contact terminal (130) mounted in an electrical connector (100) such that a forward end of the terminal is exposed for mating and faces forwardly, said connector including a pair of locking lugs (150) being provided with a radially inwardly directed lip (154), said protection cap (200) characterized by:
an integrally molded body (210) including a pair of walls (220) and a pair of rigid latch (280) members extending axially forward therefrom to define a cavity (214); and
a resilient member (260) disposed in the cavity and configured for biasing against the forward end of the connector and providing a cover for protecting the exposed mating end of the contact terminal;
each wall (220) having first and second longitudinal wall ends (221, 222) with the first wall ends (221) being spaced from the second wall ends (222) to define a separation therebetween sized to dispose one latch member therein;
each said latch member (280) having first and second longitudinal latch edges (281, 282) with the first of said latch edges (281) being adjacent to the second of said wall ends (222) and the second of said latch edges (282) being spaced from the first of said wall ends (221);
each said latch member further including a radially outwardly directed ridge (250) having a lateral sidewall (251) cooperating with the first of said wall ends (221) to define a keyway (254) for allowing axial approach and retreat of the locking lug and for preventing rotation of the lug and the connector relative to the cap and a V-shaped portion for engaging the lip, the V-shaped portion including a pair of ramps (255, 256) which slope from the first and second latch edges respectively to meet at a peak (257) medial of the latch and which allow relative rotation between the cap and the connector while substantially preventing relative axial retreat of the connector from the cap;
a lug locking recess (258) being defined between the peaks (257) and the second ends (222) of the walls, whereby for assembly each lug (150) is guided forwardly in the keyway (254) and rotated from the keyway, thus causing each lip (154) to bear against the first ramp (255) and the connector and cap to advance axially towards one another, further rotation advancing the lip (154) over and beyond the peak (257) whereupon the resilient member (260) biases the lug (150) into a locked relation in the recess (258).

4,365,859
COAXIAL TAP CONNECTOR

Harold G. Hutter, Brookfield, and Leonard J. Francis, Waterbury, both of Conn., assignors to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Aug. 22, 1980, Ser. No. 180,278
Int. Cl.³ H01R *11/20, 33/00*
U.S. Cl. 339—97 P **6 Claims**



1. A simple low-cost coaxial cable tap adapted for tooless installation upon a coaxial cable in the field without interrupting the cable comprising:

a housing forming a U-shaped support channel for receiving and aligning an intact section of a coaxial cable, said housing including a coaxial connector element affixed thereto for detachable engagement with a mating coaxial connector element;

contact means in the bottom of said channel for piercing and making an electrical contact solely with the outer conductive shield of said coaxial cable when said coaxial shield is pressed into said channel;

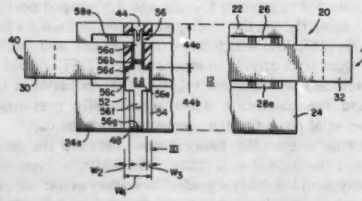
an elongate contact mounted in said housing and extending radially into said U-shaped channel for piercing said cable and making electrical connection with the central conductor thereof when said cable is pressed into said channel, said elongate contact including an insulated stem for preventing electrical connection with said shield, and a barbed head for minimizing movement of said center connection once made; and

cover means for said housing for closing said U-shaped channel and for maintaining said cable slightly compressed therein.

4,365,860
INTEGRAL HOUSING INSULATION-PIERCING CONNECTOR

Amir-Akbar Sadigh-Behzadi, Van Nuys, Calif., assignor to Thomas & Betts Corporation, Raritan, N.J.

Filed Dec. 30, 1980, Ser. No. 221,395
Int. Cl.³ H01R *11/20, 13/514*
U.S. Cl. 339—97 P **15 Claims**

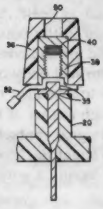


1. An electrical connector for insulation-piercing termination of multiconductor flat cable, said connector comprising an upstanding housing having a cover integral with a base and a channel bounded by said cover and said base for receiving said cable, a plurality of slots accessible at the underside of said base and extending therethrough and into said cover, each such slot having an identical geometric boundary over an extent thereof in said cover and said base adjacent said channel, and a plurality of contacts, each such contact being insertable at such base underside into one of said slots and having an insulation-piercing end portion of geometry compatible with residence thereof in said slot extent.

4,365,861
WIRE TERMINAL

William C. Gore, Elgin, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Dec. 29, 1980, Ser. No. 221,072
Int. Cl.³ H01R *9/10*
U.S. Cl. 339—202 **6 Claims**



1. An electrical connector comprising a bolt and a cap said bolt comprising an axially extending member having a first maximum external lateral dimension, a laterally extending flange having a second maximum external lateral dimension, said flange forming a first reference surface in a first plane said member having a longitudinal slot extending axially thereinto, the bottom of said slot forming a second reference surface in a second plane axially removed from said first plane, said first and second reference surfaces being interconnected by generally axially extending walls, said member having an external thread on a portion thereof; said cap having an internal thread on a portion thereof which forms a first maximum internal lateral dimension and will mate with the external thread on said bolt, a recess at one end of said cap defining a second maximum internal dimension which is greater than said first maximum internal lateral dimension, said recess further defining a shoulder at the point of maximum extent into the cap and an annular internal surface extending toward said one end, such that a wire may be inserted in said slot and the cap threadingly engaged with said bolt so the wire will be deflected into a non-linear path at least partially engaging a portion of axially extending walls with a portion of the wire effectively clamped between said second reference surface on the bolt and the shoulder of the cap recess.

4,365,862
OPTICAL SWITCH

Hiroshi Terui, and Morio Kobayashi, both of Mito, Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Tokyo, Japan

Filed Jan. 5, 1981, Ser. No. 222,650
Claims priority, application Japan, Jan. 18, 1980, 55-3474; May 2, 1980, 55-59179; Jun. 7, 1980, 55-76861; Oct. 6, 1980, 55-138766
Int. Cl.³ G02B *5/14*
U.S. Cl. 350—96.13 **19 Claims**

1. An optical switch comprising:

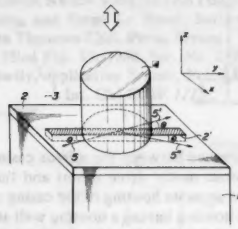
a substrate with a refractive index n_1 which is transparent with respect to a guided light beam;

an optical waveguide film with a refractive index n_2 which is formed on said substrate;

a low-refractive-index region with a refractive index n_2' which

is smaller by a predetermined value than said refractive index n_2 formed at a predetermined location in said optical waveguide film;

a movable dielectric chip with a refractive index n_4 which is transparent with respect to said guided light beam and a relative distance of which is adjustable relative to a plane including said low-refractive-index region and a vicinal area of said optical waveguide film in the vicinity of said low-refractive-index region; and



an intermediate layer with a refractive index n_3 which is disposed between said plane and said movable dielectric chip, wherein said refractive indices n_1, n_2, n_2', n_3 and n_4 have a relationship of $n_2 > n_2' > n_4 > (n_1, n_3)$, and effective refractive indices of said optical waveguide film and said low-refractive-index region are varied by changing a distance between said plane and said movable dielectric chip, so that the guided light beam incident to said low-refractive-index region is deflected.

4,365,863

OPTICAL SWITCH FOR A VERY LARGE NUMBER OF CHANNELS

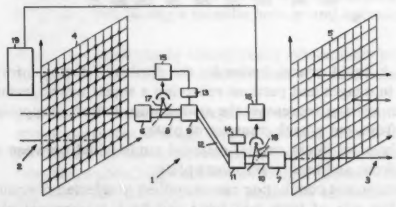
Georges J. G. Broussaud, Colombes, France, assignor to Le Materiel Telephonique Thomson-CSF, Colombes, France

Filed May 29, 1980, Ser. No. 154,298

Claims priority, application France, May 30, 1979, 79 13766

Int. Cl.³ H04B 9/00

U.S. Cl. 350—96.15 **7 Claims**



1. A bidirectional optical switching system for selectively interconnecting a first group of optical fibers and a second group of optical fibers, the ends of the fibers in each group being coplanar and arranged in an array, the two arrays facing one another and having a space therebetween, said bidirectional optical switching system comprising:

a plurality of propagation mode converters, with one converter being associated with each fiber of each array, for receiving the optical signal from the associated fiber and producing an output optical signal;

a plurality of deflectors with one deflector being associated with each propagation mode converter, for receiving the output signal from the associated propagation mode converter;

at least one control interface being associated with at least one deflector, for controlling the associated deflector;

at least one logic circuit, with each logic circuit being associated with at least one control interface, for driving the associated control interface;

a plurality of address detectors, with one address detector being associated with each propagation mode converter and each of said detectors located between each associated mode converter and each said mode converters associated with one of said deflectors, said address detectors extracting address data from said output optical signal and controlling said logic circuit in response thereto, so that said control interface causes said deflector to switch the output optical signal to a desired optical fiber of the opposite array.

4,365,864

OPTICAL FIBRE MULTIPORT COUPLERS

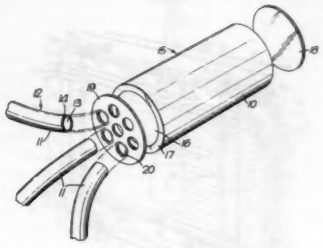
Andrew G. Cowley, Eastleigh; David N. Payne, Southampton, and Paul M. Watson, Porchester, all of England, assignors to National Research Development Corporation, London, England

Filed Aug. 1, 1980, Ser. No. 174,444

Claims priority, application United Kingdom, Aug. 10, 1979, 7927916

Int. Cl.³ G02B 5/14, 5/16, 5/172

U.S. Cl. 350—96.16 **14 Claims**



1. An optical fibre coupler for use with an array of fibres each including a cladded central core, the coupler including a mixer-rod having a layer of highly reflective material located on a fibre array connection surface on the mixer-rod, the layer being non-continuous, arranged to reflect internally of the mixer-rod and containing apertures corresponding to fibre core positions when the fibre array is coupled.

4,365,865

HYBRID CABLE CONSTRUCTION

Kenneth M. Stiles, San Dimas, Calif., assignor to Sea-Log Corporation, Pasadena, Calif.

Filed Jan. 30, 1981, Ser. No. 229,663

Int. Cl.³ G02B 5/16

U.S. Cl. 350—96.23 **11 Claims**

1. A hybrid cable construction having an axis and windings which comprises a plurality of optical fibers helically wound with a plurality of sheathed metal conductors formed of a metal core surrounded by an adherent sheath of fiber-reinforced resin, the optical fibers and sheathed metal conductors wound in the cable to a lay angle which substantially satisfies the expression:

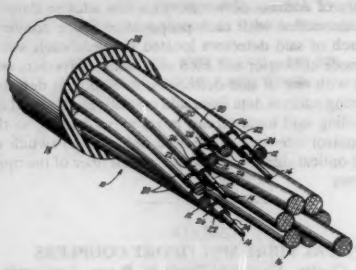
$$R_c = \frac{\text{Pitch Diameter}}{2(\sin\ \theta)^2}$$

wherein

R_c = radius of curvature of a given winding of the cable and is greater than 5 cm;

Pitch Diameter = diameter of the cable at a given winding; and

θ=lay angle of a winding to the axis of the cable.

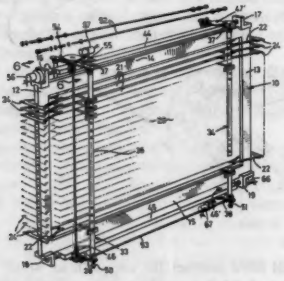


4,365,866

LIGHT MASKING DEVICE

Peter Softly, Toronto, Canada, assignor to Invisible Optics Inc., Toronto, Canada

Filed Dec. 10, 1980, Ser. No. 214,710
Int. Cl.³ G02B 27/00
U.S. Cl. 350—276 R 11 Claims



1. A light masking device for improving image contrast on a video display screen under conditions of high ambient light, comprising a support frame adapted to be positioned in front of the screen and an optical filter supported thereby, the optical filter comprising a grating of spaced, elongated planar slats extending horizontally across the width of the screen, the slats being differentially inclined from the horizontal in the directions of their widths so as to converge on a horizontal line at a selected height and a selected distance from the screen, wherein the slats are pivotally connected to the support frame for pivotal movement about respective horizontal axes, the device further comprising linkage means interconnected with the slats for differentially adjusting the inclinations of the slats for selectively adjusting the position of said horizontal line on which the inclined slats converge.

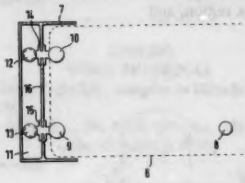
4,365,867

ELECTRICALLY ADJUSTABLE APPARATUS FOR MOTOR VEHICLE REAR VIEW MIRROR

Roland Siefert, Im Herrengarten 6, D-7737 Bad Dürrheim, Fed. Rep. of Germany

Filed Dec. 18, 1980, Ser. No. 217,759
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1979, 2952084
Int. Cl.³ G02B 7/18
U.S. Cl. 350—289 19 Claims

1. An electrically operated adjustable apparatus for a motor vehicle rear view mirror having a mirror casing and including therein a mirror support to which the mirror casing is connected via a first fixed junction point and two further junction points, one of said further junction points being located on a first straight line through said first fixed junction point and said two further junction points being located on a second straight line which is perpendicular to said first straight line, further including electric motor drive means linked by gear means to said further junction points for moving said mirror support so



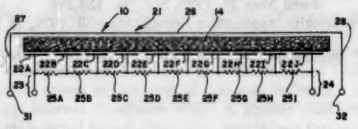
as to vary the distance between the mirror casing and mirror support, the electric motor drive means and the gear means being located in a separate housing of the casing on one side of said support, the housing having a housing wall at said one side thereof containing two slots therein in which driving means of said gear means for said further junction points are mounted for sliding movement along said slots.

4,365,868

LIQUID CRYSTAL DEVICE FOR DIRECT DISPLAY OF ANALOG INFORMATION

Kenneth J. Richardson, Hudson, Ohio, assignor to Eaton Corporation, Cleveland, Ohio

Continuation of Ser. No. 811,308, Jun. 29, 1977, Pat. No. 4,193,669. This application Mar. 17, 1980, Ser. No. 131,171
The portion of the term of this patent subsequent to Mar. 18, 1997, has been disclaimed.
Int. Cl.³ G02F 1/13
U.S. Cl. 350—334 7 Claims



1. A liquid crystal device for the display of analog information in images and patterns receiving a signal whose instantaneous voltage represents the analog information, comprising:

a front and a back transparent plate,

a layer of liquid crystal material sandwiched between said front and back transparent plates,

transparent conducting means applied to selected portions of the side of both said front and back transparent plates adjacent said liquid crystal material including at least two physically separate, distinct segments applied to one said transparent plate and at least one conducting plate applied to the opposite said transparent plate, said conducting plate having the same potential thereacross whereby all electrical connections to said conducting plate effectively provide only a single electrical terminal, and

means for having a voltage gradient impressed transversely across said transparent plate on which said distinct segments are applied including a resistor network formed out of the same material utilized to form said distinct segments and located on said transparent plate on which said distinct segments are applied, said resistor network having at least one physically separate, distinct resistor interposed between each said distinct segment such that said transparent plate on which said distinct segments are applied has only two terminals, said resistor network permitting a

bidirectional flow of current through said segments, the maximum potential in said voltage gradient never exceeding the maximum voltage of said signal containing the analog information,

the signal containing the analog information connected to one terminal of said transparent plate on which said distinct segments are applied and to said conducting plate.

4,365,869

LARGE-SCREEN VISUALIZATION DEVICE

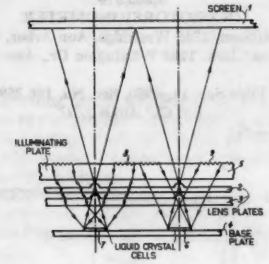
Michel Hareng, and Serge Le Berre, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Feb. 11, 1980, Ser. No. 120,127

Claims priority, application France, Feb. 13, 1979, 79 03637

Int. Cl.³ G02F *1/13*

U.S. Cl. 350—345 8 Claims



1. A device for visualizing an image on a large screen, which comprises:

a plurality of liquid crystal visualization cells spread out in a plane so as to visualize each one a piece of said image;

a transparent plate forming a light-guide substantially parallel to the plane of said cells;

means for injecting into said transparent plate light radiation which is propagated therein in a guided manner;

light path modifying means arranged in one face of said transparent plate for extracting from said transparent plate said light radiation and for selectively illuminating said cells, said cells having a metallic bottom and operating by reflection;

a screen for visualizing by transparency substantially parallel to the plane of said cells and situated at a small distance therefrom;

a plurality of lenses for projecting separately onto said screen the pieces of image written into said cells to reform on this screen the complete image, said lenses being arranged for collecting back scattered light radiation emerging from said cells, said back scattered radiation being selectively transmitted to said screen.

4,365,870

ELECTROCHROMIC DISPLAY DEVICE

Hiroshi Morita, Machida, and Keiko Miyai, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Oct. 27, 1980, Ser. No. 201,193

Claims priority, application Japan, Oct. 29, 1979, 54-138656

Int. Cl.³ G02F *1/17*

U.S. Cl. 350—357 2 Claims

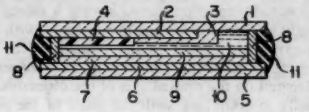
1. An electrochromic display device comprising:

a display electrode;

an electrochromic material layer formed on said display electrode;

a counter electrode spaced apart from said display electrode;

an electrolyte disposed between said two electrodes; and



a cermet layer formed on said counter electrode and consisting of WO_3 and Ta.

4,365,871

OPTICAL SYSTEM FOR MICROSCOPES

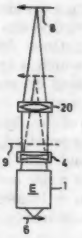
Franz Muchel, Königsbronn, Fed. Rep. of Germany, assignor to Carl Zeiss-Stiftung, Heidenheim on the Brenz, Fed. Rep. of Germany

Filed May 12, 1980, Ser. No. 148,820

Claims priority, application Fed. Rep. of Germany, May 17, 1979, 2919924

Int. Cl.³ G02B *3/00, 15/02, 21/02*

U.S. Cl. 350—414 15 Claims



1. Means for making optical systems for microscopes having objectives of infinite exit vertex focal length compatible with optical systems for microscopes having objectives of finite exit vertex focal length although the condition of chromatic correction of the respective objectives of the two systems with respect to transverse chromatic aberrations in an intermediate image may be different, the respective microscopes including tubes and objective housings, characterized by the fact that

(a) optical elements in the form of adapters (3, 4, 14) are provided which are fastened to the objective housings,

(b) the adapters for all objectives of one type, when used on similar tubes, have in each case the same dispersion and refractive power, and

(c) the adapters (4, 14) for combination with objectives (1) of finite exit vertex focal length have a refractive power of negative sign, and the adapters (3) for combination with objectives (2) of infinite exit vertex focal length have a refractive power of the same magnitude but of positive sign.

4,365,872

EYE FUNDUS CAMERA HAVING WORKING DISTANCE DETECTING DEVICE

Kazuo Nunokawa, Tokyo, Japan, assignor to Tokyo Kogaku Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 29, 1980, Ser. No. 116,815

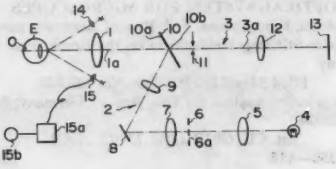
Claims priority, application Japan, Jan. 30, 1979, 54-9542

Int. Cl.³ A61B *3/14, 3/10*

U.S. Cl. 351—208 6 Claims

1. Eye fundus camera including objective lens means having an optical axis and adapted to be placed a distance from a patient's eye, an illumination system for projecting an illumina-

tion light through the objective lens means, an imaging optical system for focusing a light bundle as reflected at fundus of the patient's eye on an imaging plane, said illumination system including annular aperture means having a substantially ring-shaped light transparent portion in conjugate with pupil of the patient's eye with respect to the objective lens means and reflecting means having a substantially ring-shaped reflecting surface located on the optical axis of the objective lens means substantially in conjugate with the pupil of the patient's eye with respect to the objective lens means so that the illumination light that is passed through the annular aperture means is focused on the reflecting surface of the reflecting means and then directed through the objective lens means to the patient's eye, working distance detecting means including light source means located at one side of the optical axis of the objective



lens means for projecting a working distance detecting light in a plane containing the optical axis of the objective lens means so that the working distance detecting light intersects the optical axis at a point which is apart from the objective lens means by a predetermined distance and light sensing means located symmetrically with the light source means with respect to the optical axis of the objective lens means, said annular aperture means being provided, in a plane corresponding to the plane containing said light source means and said light sensing means at least at a side corresponding to a side where the light sensing means is located, with masking means for masking a portion of said transparent portion of the annular aperture means said masking means being located such that light from the illumination source is blocked by said masking means so as to not interfere with said distance detecting means.

4,365,873

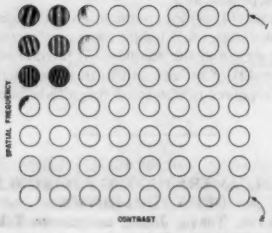
SPATIAL FREQUENCY AND CONTRAST SENSITIVITY TEST CHART

Arthur P. Ginsburg, 132 Lonsdale Ave., Dayton, Ohio 45419

Continuation of Ser. No. 98,084, Nov. 28, 1979, abandoned. This application Jul. 14, 1981, Ser. No. 282,997

Int. Cl.³ A61B *3/02*

U.S. Cl. 351—239 **17 Claims**



1. A vision sensitivity evaluation apparatus by which the concurrent effects of contrast sensitivity and spatial frequency are ascertained, comprising:

a visually perceivable chart having a multiplicity of patches being systematically organized over the face of the chart into a plurality of groups;

each patch comprised by a grating of alternating light and dark regions being calibrated such that its contrast distribution varies between peaks and troughs of luminance and its pattern integrates a substantially constant contrast luminance level with a substantially constant spatial frequency;

said gratings in one group of patches having substantially equal contrast levels which differ from the respective contrast levels of the gratings in other groups of patches;

said gratings in a different one group of patches having substantially equal spatial frequencies which differ from the respective spatial frequencies of the gratings in other different groups of patches; and

said grating of each patch having a particular perceivable orientation, depending upon the threshold of visual sensitivity of a normal observer, which renders its detection by the observer subject to verification.

4,365,874

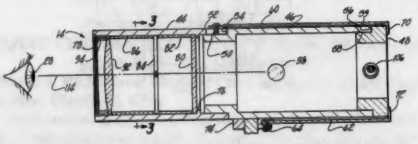
OCULOTORSIONOMETER

Wanda O. Milburn, 1745 Westridge, Ann Arbor, Mich. 48105, and T. Dean Clack, 1162 Warrington Dr., Ann Arbor, Mich. 48103

Filed Sep. 11, 1980, Ser. No. 186,259

Int. Cl.³ A61B *3/02*

U.S. Cl. 351—243 **14 Claims**



1. An oculotorsionometer for measuring torsional rotation of a patient's eyeball about the visual axis of the eyeball comprising:

a frame mountable to the patient so as to be fixed with respect to the patient's skull,

afterimage means mounted on said frame so as to create a transitory bright image visible to the patient for imprinting the retina of the patient's eye with an afterimage,

target image means visible to the patient and rotatably mounted on said frame for rotation about said visual axis so as to permit the patient to align a target image with said afterimage, and

measuring means engaged by said target image means so as to indicate the angular displacement of said target image means relative to a preset reference position.

4,365,875

MOTION PICTURE CAMERA

Noritsugu Hirata, Yokohama, and Hiroyuki Takimoto, Urawa, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 31, 1978, Ser. No. 929,240

Claims priority, application Japan, Aug. 12, 1977, 52-97294; Aug. 23, 1977, 52-101259; Aug. 23, 1977, 52-101262

Int. Cl.³ G03B *9/10, 21/36, 31/02*

U.S. Cl. 352—25 **29 Claims**

1. A motion picture camera comprising:

(a) a power source circuit;

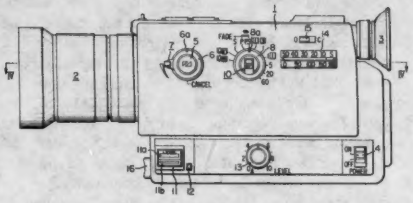
(b) a photographing operation control circuit for controlling a photographing operation including a film feeding operation;

(c) a power source operating member;

(d) means for applying power from said power source circuit to said photographing operation control circuit, in response to the operation of said power source operating member, said control circuit assuming an operative state by the power application;

(e) trigger operation means, said photographing operation control circuit with the power applied thereto being operated in response to the operation of said trigger operation means;

(f) fade means for performing a fade-out operation for gradually decreasing, from a normal level, the quantity of light incident on the film, or a fade-in operation for gradually increasing, to the normal level, the quantity of the incident light;



(g) fade operating means, said fade means being operated in response to the operation of said fade operating means;

(h) a signal forming circuit for forming a power connection signal when power is applied to said photographic operation control circuit; and

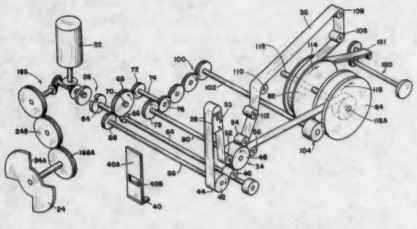
(i) a control circuit responsive only to the power connection signal to perform, independently of the operation of said fade operating means, the fade-in operation through said fade means.

4,365,876

MOTION PICTURE CAMERA

Rouel R. Campbell, 7064 E. 52nd St., Tulsa, Okla. 74145

Filed Sep. 22, 1978, Ser. No. 944,919
Int. Cl.³ G03B 1/00
U.S. Cl. 352—84 **8 Claims**



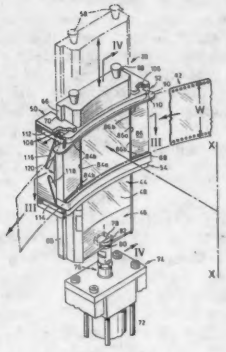
1. A high speed motion picture camera comprising a power section operably connected with a film carrying section, release means cooperating between the two sections for selective disengagement therebetween and operable by one hand for facilitating said disengagement, a shutter means operably connected with the power section, said film carrying section including a film drive apparatus for moving the film from a film supply reel to a film take-up reel, means provided in the film drive apparatus for forming a film loop, a film gate for receiving the film loop therethrough, stationary register pin means provided in the film gate means for intermittent engagement with the film loop for intermittently stopping the forward movement of the film loop during exposure of a single frame of the film during activation of the shutter means, eccentric means engagable with a portion of the film loop in a beater action for intermittently pulling a preselected length of the film through the film gate and for intermittently engaging the film with the register pin means, yieldable compensating means receiving the film loop thereover for compensating for inconsistencies in the film and maintaining the film taut in the stopped position of the loop, said compensating means including film engaging spring means complementary to the size of the film for receiving the film thereagainst and applying yieldable pressure thereon for maintaining said taut condition therefor, and wherein the film drive means includes positive drive means engagable with the take-up reel for driving thereof, and wherein the positive drive means comprises a relatively small diameter roller engagable with the outer periphery of the take-up reel, said roller member being yieldably engaged with the reel for reducing the driving engagement pressure therebetween.

4,365,877

FIELD FLATTENER LENS ELEMENT ASSEMBLY

William C. Shaw, Streetsville, Canada, assignor to IMAX Systems Corporation, Toronto, Canada

Filed Aug. 6, 1981, Ser. No. 290,630
Int. Cl.³ G03B 1/00
U.S. Cl. 352—184 **12 Claims**



1. A film support element assembly for a projector, camera and like apparatus having a rolling loop film transport mechanism, the assembly being adapted to support a film in relation to an aperture of said apparatus and comprising:

an elongate lens element having a film support surface across which successive portions of a film of known width can be laid during transportation of said film in a film transport path including said aperture;

means supporting said lens element for movement in a direction generally normal to said path between first and second positions in which respectively different portions of said film support surface are disposed in said film path; and,

first and second wiper elements extending transversely of and in contact with said film support surface on respectively opposite sides of said film path, said elements being adapted to wipe said surface and trap debris which has accumulated thereon, upon movement of the lens element relative to said wiper elements, and said wiper elements being removable for disposal of trapped debris;

said film support surface of the lens element being continuous and of uniform cross-sectional shape and having a length sufficiently in excess of twice the width of the film that said movement of the lens element between its first and second positions will cause the relevant wiper element to traverse the entire extent of a said portion of the film support surface moving out of said film path.

4,365,878

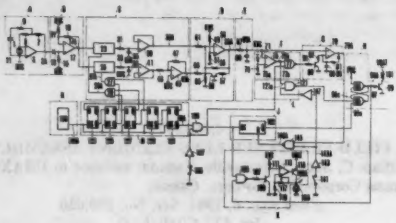
SIGNAL PROCESSING CIRCUITRY FOR A DISTANCE MEASURING SYSTEM

Ryuji Tokuda, Tokyo, Japan, and Bernhard H. Andresen, Dallas, Tex., assignors to Canon, Inc., Tokyo, Japan and Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 94,418, Nov. 15, 1979, Pat. No. 4,300,824. This application May 1, 1981, Ser. No. 286,010

Int. Cl.³ G03B 3/10

U.S. Cl. 354—25 9 Claims



1. A signal processing circuit for a distance measuring system having a light measuring circuit for converting light from an object to be measured into an electrical signal, comprising:

(A) peak detecting means for serially comparing the electrical signal to detect a peak signal and for holding only the following peak signal having a signal level exceeding the signal level of the preceding peak, and

(B) output means for generating the following peak signal as distance information when the following peak signal is held for a time interval longer than a predetermined time.

4,365,879

EXPOSURE CONTROLLING DEVICE ADAPTED TO CAMERAS USING INTERCHANGEABLE LENSES

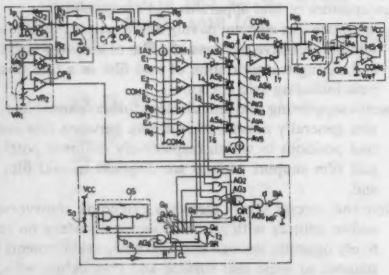
Yasuo Ishiguro, Tokyo, Japan, assignor to Copal Company Limited, Tokyo, Japan

Continuation of Ser. No. 185,444, Sep. 9, 1980, abandoned. This application Feb. 16, 1982, Ser. No. 348,744

Claims priority, application Japan, Sep. 14, 1979, 54-118142

Int. Cl.³ G03B 7/08

U.S. Cl. 354—38 3 Claims



1. An exposure controlling device for use with cameras using interchangeable lenses comprising:

a first means for determining an exposure value for a field of view to be photographed by measuring the light from the field of view after that light has passed through a photographing lens having a predetermined F-number and a fully opened diaphragm aperture,

a second means connected to said first means for establishing a plurality of predetermined exposure zones and determining to which one of these exposure zones said exposure value belongs, the second means including a plurality of comparing circuits each having a first input terminal connected to said first means and a second input terminal respectively connected to one of a plurality of reference voltage sources each providing a different voltage, only one of said comparing circuits containing within its range a voltage corresponding to an exposure value determined by said first means thereby determining an exposure zone,

a third means connected to said second means for determining a diaphragm value for said photographing lens in response to the exposure zone determined by said second means, the third means including a plurality of gate circuits each one having a first input terminal respectively connected to an output terminal of its respective comparing circuit and a second input terminal respectively connected to one of a plurality of pulse generating circuits providing a predetermined number of pulses per unit time, only said gate circuit connected to said operated comparing circuit being operated to pass a corresponding number of pulses to a diaphragm control element thereby to determine a diaphragm aperture corresponding to said discriminated exposure zone, and

a fourth means connected to said third means for determining an exposure time by comparing said diaphragm value determined by said third means with the F-number of said photographing lens, the exposure time being determined (a) from said exposure value and diaphragm value when said diaphragm value is larger than said F-number and (b) from said exposure value and said F-number when said diaphragm value is smaller than said F-number.

4,365,880

INDICATOR FOR CAMERA

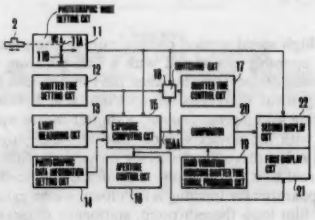
Masayoshi Kiuchi, Yokohama; Masaharu Kawamura, Kawasaki, and Hiroyasu Murakami, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 10, 1981, Ser. No. 242,240

Claims priority, application Japan, Mar. 11, 1980, 55-31229[U]

Int. Cl.³ G03B 17/18

U.S. Cl. 354—60 L 8 Claims



1. An indicator for a camera comprising:

(a) indicating means responsive to mode signals for displaying an indicating state which is variable in accordance with various photographic mode signals to be received; and

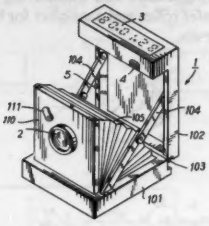
(b) control means connected to said indicating means to change the indicating state of said indicating means in response to a first signal indicative of that a shutter time value obtained in longer than a hand vibration inducing shutter time value.

4,365,881

PHOTOGRAPHIC CAMERA WITH TIMEPIECE

Kiyoaki Hazama; Kazuo Shiozawa, and Koichi Matsumoto, all of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 47,830, Jun. 12, 1979, abandoned. This application Mar. 6, 1980, Ser. No. 127,766
Claims priority, application Japan, Jun. 19, 1978, 53-73293
Int. Cl.³ G03B *29/00, 17/04, 17/24*
U.S. Cl. 354—76 7 Claims



1. In a camera having a shutter release means and a built-in electronic timepiece,

a camera housing comprising a body and a cover hingedly connected with each other so that the cover is movable between a first position in which the camera housing is collapsed to a box-like configuration and a second position in which the housing is open for taking photographs,

a data displaying portion disposed on an external surface of the camera housing,

an objective lens on the housing and disposed for the taking of photographs when the cover is in said second position, said lens being concealed within the camera housing in said first position of the cover,

data displaying means positioned at the data displaying portion of the housing,

a driver circuit for generating time and other data signals and having an output connected to the data displaying means, and

means for selecting the data signals appearing at the output of the driver circuit and fed for display to the data displaying means, the time data being displayed by the data displaying means while the housing is collapsed so that the camera is useful as a table clock and is function as a camera is concealed in said collapsed condition of the housing.

4,365,882

COLOR STANDARD METHOD AND APPARATUS

Lynnford E. Disbrow, 1400 W. Bruneau, Kennewick, Wash. 99336

Filed Jun. 29, 1981, Ser. No. 278,644
Int. Cl.³ G03B *17/24, 27/76*
U.S. Cl. 354—106 2 Claims

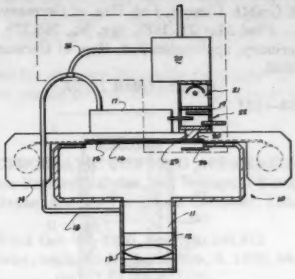
1. A method of comparing color values in an aerial photograph of a land area to a known standard, comprising the following steps:

selecting a plurality of filters matching averaged individual color components expected in vegetation as portrayed in the land area when photographed;

photographing the land area by exposure of a film frame under ambient lighting conditions;

simultaneously exposing an area of film within the frame to a preselected color pattern by transmission of repeatable light and color values from a known light source through said plurality of filters;

and developing the film by subjecting the frame and adjacent area to identical processing steps, whereby comparisons can be made between the resulting average color values portrayed in the developed area of film and those in the developed frame adjacent to it.

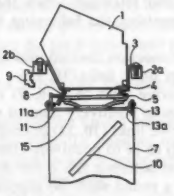


4,365,883

FOCUSING SCREEN HOLDING DEVICE

Yukio Takaoka, Asaka; Keisuke Haraguchi, Ranzan, and Shiyouichi Yamaka, Kamifukuoka, all of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 20, 1981, Ser. No. 284,743
Claims priority, application Japan, Sep. 11, 1980, 55-129666[U]
Int. Cl.³ G03B *13/00, 19/12*
U.S. Cl. 354—152 3 Claims



1. A focusing screen holding device for a single-lens reflex camera having a focusing screen, comprising:

a focusing screen holding frame;

a plurality of focusing adjusting screws for adjusting a position of said focusing screen;

a focusing screen retaining spring; and

a hinge having first and second leaves, said focusing screen holding frame being mounted on said first leaf, said first leaf having a hook at an outer end thereof, said second leaf being secured to a mirror box of said camera so that said focusing screen holding frame is swingable about a shaft of said hinge, said hook being engagable with said mirror box so that said focusing screen holding frame is fixedly secured to said mirror box, said focusing screen retaining spring being located between said first leaf and said focusing screen holding frame, said focusing screen retaining spring exerting a depressing force on said focusing screen, said focusing screen being accessible through an opening of a lens mount to adjust and replace said focusing screen, said focusing adjusting screws being positioned so as to be accessible and adjustable through said opening in said lens mount.

4,365,884

STILL CAMERA WITH RETRACTING OBJECTIVE

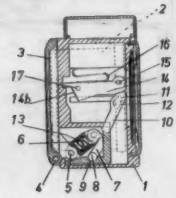
Helmut Knapp, Biebertal, Fed. Rep. of Germany, assignor to MINOX GmbH, Giessen, Fed. Rep. of Germany

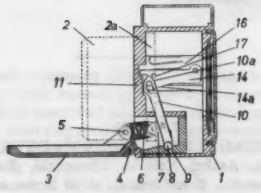
Filed May 21, 1981, Ser. No. 265,779

Claims priority, application Fed. Rep. of Germany, May 29, 1980, 3020340

Int. Cl.³ G03B *17/04*

U.S. Cl. 354—187 **7 Claims**





1. In a still camera having a housing, a fold up cover, a retracting objective and a drive connection between these components acting within the light tight camera space on an objective mount so that the objective is advanced when the cover is opened and retracted when the cover is shut, the improvement comprising the following features in combination:

(a) said drive connection divided into outer drive links (4–5, 6, 7) and inner drive links (10, 11);

(b) said outer drive links (4–5, 6, 7) connected with said cover (3) so as to positively control said cover;

(c) said inner drive links (10, 11) connected with said objective mount (2) so as to positively control said mount; and

(d) a connection between the outer and inner drive links consisting of a round shaft (8) supported in a bore (9) of said housing (1) with a light tight snug fit.

4,365,885

APPARATUS FOR REMOVING UNNECESSARY CHARGES ON A PHOTOSENSITIVE MEMBER IN AN ELECTROPHOTOGRAPHIC SYSTEM

Masaji Nishikawa, Hachioji, Japan, assignor to Olympus Optical Company Limited, Tokyo, Japan

Continuation of Ser. No. 952,131, Oct. 17, 1978. This application Aug. 28, 1980, Ser. No. 184,059

Claims priority, application Japan, Oct. 24, 1977, 52-126749

Int. Cl.³ G03G *15/00*; G03B *27/76*

U.S. Cl. 355—3 R **3 Claims**

1. An electrophotographic apparatus comprising:

an endless photosensitive member arranged movably at a constant speed;

means for uniformly charging the photosensitive member;

means for projecting an image of a document to be copied onto the uniformly charged photosensitive member to form an electrostatic charge latent image;

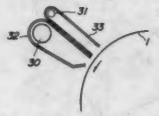
first lamp means for illuminating at least one side edge of the photosensitive member in a non-pictorial area to remove undesired charge thereon;

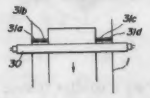
second lamp means for illuminating a non-pictorial area of the photosensitive member between a rear edge and a front edge of the photosensitive member viewed in the moving direction thereon, said second lamp means including an elongated discharge lamp extending in the direction transverse to the moving direction of the photosensitive member;

said first and said second lamp means having an intensity lower than that associated with said projecting means during the formation of the latent image;

developing means for developing the latent image with toners to produce a toner image;

transferring means for transferring the toner image onto an image receiving means, said transferring means including a biased transfer roller and a member for biasing the image receiving means;





fixing means for fixing the tansferred toner image onto the image receiving means to form a copy;

means for repeatedly activating said developing, transferring and fixing means for the same and single latent image once formed on the photosensitive member to form a plurality of copies;

means for erasing the latent image after a given number of copies have been formed; and

means for controlling said first and second lamp means during a formation of a plurality of copies in such a manner that undesired charge injected from the biased transferring means onto the non-pictorial areas of the photosensitive member is removed photoelectrically.

4,365,886

ELECTROSTATIC COPYING APPARATUS WITH AN ATTACHMENT TO ENABLE TWO-SIDED COPYING

Reiji Murakami, and Shunichi Nakajima, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 4, 1981, Ser. No. 240,382

Claims priority, application Japan, Mar. 5, 1980, 55-27634

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—3 SH **8 Claims**

1. An electrostatic copying apparatus comprising a main copying device and an auxiliary copying device removably coupled with said main copying device, said main copying device comprising:

first and second paper supply trays holding recording papers;

a main housing having a paper supply opening into which said first paper supply tray is inserted and a paper exhaust opening;

a copying mechanism provided in said main housing for copying an image onto said recording paper;

first and second paper supply means provided in said main housing for selectively supplying the recording papers from said first and second paper supply trays to said copying mechanism; and

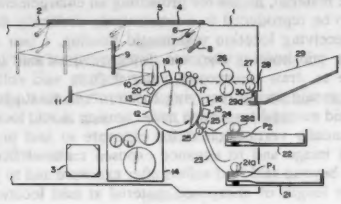
means provided in said main housing for leading the copied recording paper to said paper exhaust opening,

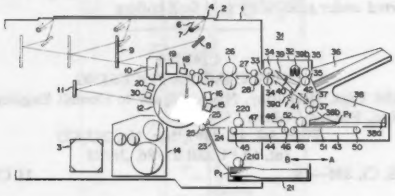
and said auxiliary copying device comprising:

an auxiliary housing which may be removably coupled with said main housing, while said first paper supply tray is separated from said main housing;

first and second auxiliary paper exhaust trays provided in said auxiliary housing;

a selective paper supply mechanism provided in said auxiliary housing for selectively supplying the recording paper, which is supplied from said main housing through





said paper exhaust opening to said auxiliary housing, to said first and second auxiliary paper exhaust trays; and

a transfer mechanism which cooperates with said first paper supply means for transporting the recording paper from said second auxiliary paper exhaust tray to said copying mechanism through said paper supply opening.

4,365,887

SHEET DISTRIBUTION METHOD AND APPARATUS

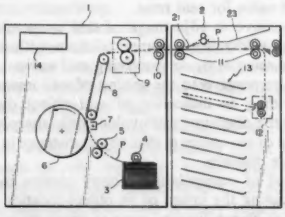
Yohtaro Kakitani; Tamaki Kaneko; Sunao Ikeda; Tugio Okuzawa; Hideo Kikuchi, and Kunio Hibi, all of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Sep. 22, 1980, Ser. No. 189,453

Claims priority, application Japan, Apr. 14, 1980, 55-48094

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—14 R **15 Claims**



9. A sheet distribution apparatus for use with a copying machine comprising:

a plurality of bins into which a plurality of sets of copies produced by the copying machine during a copying operation or cycle are distributed;

stop switch means for stopping the copying operation or cycle in the copying machine;

interrupt switch means for interrupting the copying operation or cycle;

a first means for inhibiting production of a next copy or copies while continuing a feeding operation of copies into the bins when at least one of the stop switch and interrupt switch means is depressed;

a second means for stopping the feeding operation of the copies when a number of the copies fed from the copying machine is equal to a number of the copies stored in the bins; and

a third means for releasing the copying operation from being stopped to permit production of a next copy or copies.

4,365,888

ELECTROSTATIC COPYING APPARATUS

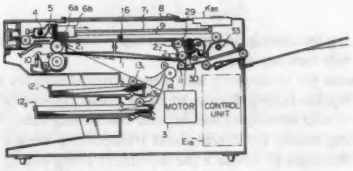
Masao Hosaka; Yoshitaka Ogino, and Nobuyuki Yanagawa, all of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Oct. 29, 1980, Ser. No. 201,872

Claims priority, application Japan, Nov. 5, 1979, 54-143048

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—14 R **18 Claims**



1. An electrostatic copying apparatus including a photoconductive member, imaging means for forming an electrostatic image of an original document on the photoconductive member, developing means for developing the electrostatic image to form a toner image, transfer means for transferring the tonner image to a copy sheet and a drive motor for driving the photoconductive member, characterized by comprising:

mark means provided on the photoconductive member;

sensor means for sensing the mark means and producing signals in response thereto;

pulse generator means driven by the motor for generating timing pulses;

counter means for counting the timing pulses;

control means for controlling the imaging means, developing means and transfer means in accordance with predetermined counts in the counter means; and

compensation means for resetting the counter means in response to a first signal from the sensor means, sensing a count in the counter means in response to a second signal from the sensor means and, when the sensed count is different from a predetermined value, setting the counter means to the predetermined value;

the compensation means further comprising alarm means and means for energizing the alarm means when, in response to the second signal from the sensor means, the count in the counter means is outside a predetermined range which contains the predetermined value.

4,365,889

DOCUMENT HANDLING UNIT

Morton Silverberg, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 10, 1980, Ser. No. 205,473

Int. Cl.³ G03G *15/04*; B65H *1/30*

U.S. Cl. 355—14 SH **10 Claims**

1. An apparatus for moving documents in a recirculating path from a stack to an imaging station, including:

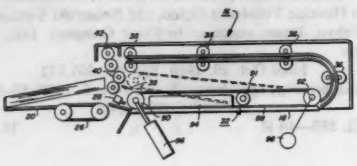
means for feeding successive bottommost documents from the stack to the imaging station with one side of the document being facedown at the imaging station;

means above the imaging station for transporting an exiting document from the imaging station simultaneously with

said feeding means feeding a next successive entering document thereto;

means for pivoting said transporting means to space at least a portion of both said transporting means and the exiting document from the imaging station;

means for advancing the exiting document from said transporting means to the top of the stack, said advancing means comprising at least two paths one of the paths positioning the exiting document on top of the stack with said one side facedown and the other of the paths positioning the exiting document on top of the stack with said one side face up; and



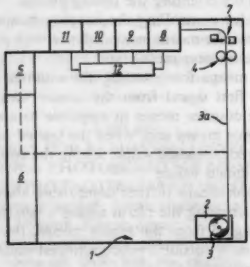
means for controlling said transporting means for transporting the exiting document along a selected one of the paths of said advancing means, said controlling means comprising means for driving said transporting means in a first direction to advance the document along one of the paths of said advancing means and in a second direction, opposed to the first direction, to advance the document along the other of the paths of said advancing means.

4,365,890

PROCESS AND APPARATUS FOR PHOTOGRAPHICALLY ENLARGING AND DEVELOPING AN IMAGE

Albert G. Himbury, 31 Camberwell Rd., London SE 5, England

Filed Nov. 12, 1980, Ser. No. 206,113
Int. Cl.³ G03B *29/00*
U.S. Cl. 355—28 **10 Claims**



1. A process for photographically enlarging and developing an image which comprises drawing unexposed light-sensitive material under tension from a roll of such material to a substantially vertically disposed image receiving location by means of feed rollers located downstream of said location and engaged with said material to support and locate said unexposed material in tension at said location, exposing said unexposed material supported under tension at said location by said feed rollers to an enlargement of the image to be reproduced, driving said feed rollers to advance said exposed material beyond said feed rollers to draw a further length of unexposed material from said roll under tension to said location and locate and support said further length of unexposed material at said location, and severing said material advanced beyond said feed rollers downstream of said feed rollers whilst retaining said further length of material at said location supported and located under tension by engagement with said feed rollers.

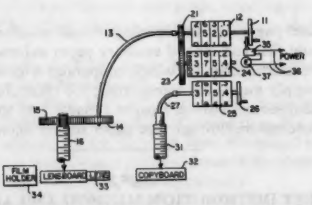
3. Apparatus for photographically enlarging and developing an image comprising a light-tight housing, a light-tight enclosure within said housing for storing a roll of unexposed light sensitive material, means for projecting an enlargement of the image to be reproduced to a substantially vertically disposed image receiving location within said housing, a pair of feed rollers in said housing disposed downstream of said location operable to draw unexposed material from said roll under tension to said image receiving location and to support and locate said material suspended under tension at said location in a substantially vertical plane for exposure to said projected enlarged image and to advance exposed material from said location beyond said feed rollers after exposure and to present a further length of unexposed material at said location supported under tension, and severing means for severing the exposed material advanced beyond said feed rollers whilst maintaining said further length of material engaged and supported under tension by said feed rollers.

4,365,891

COPY CAMERA FOCUSING

Endel Uiga, Rockaway, N.J., assignor to Cordell Engineering, Inc., Peabody, Mass.

Filed Jul. 15, 1981, Ser. No. 283,623
Int. Cl.³ G03B *27/36, 27/38*
U.S. Cl. 355—59 **11 Claims**



1. In a copy camera having lens means for focusing the image of an object location separated therefrom by an object distance upon an image plane separated therefrom by an image distance to establish a predetermined ratio of image size to object size with said ratio being linearly and nonlinearly related to said image distance and object distance, respectively, apparatus comprising,

means for adjusting said image distance to establish a predetermined value for said ratio,

means responsive to adjustment of said image distance for displaying said ratio in numerical form with digits each being the same as those specifying said value,

and means responsive to the setting of said image distance for providing an indication of said object distance for attaining the displayed ratio value while sharply focusing the image of the object at that object distance in a plane at that image distance.

4. A method of manipulating a copy camera having lens means for focusing the image of an object location separated therefrom by an object distance upon an image plane separated therefrom by an image distance to establish a predetermined ratio of image size to object size with said ratio being linearly and nonlinearly related to said image distance and object distance respectively, means for adjusting said image distance to establish a predetermined value for said ratio, means responsive to adjustment of said image distance for displaying said ratio in numerical form with digits each being the same as those specifying said value, and means for adjusting said object distance to the indication provided by said means responsive to the setting of said image distance which method includes the steps of,

adjusting said image distance to establish said predetermined value for said ratio,

observing said indication of said object distance for attaining the displayed ratio value and the visual display representative of object distance,

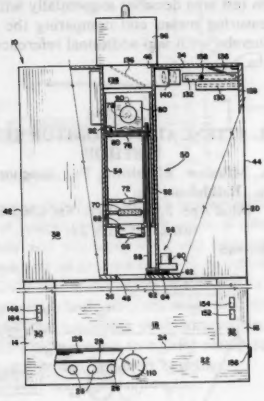
and adjusting the object distance until the latter two indications coincide.

4,365,892

APPARATUS FOR MAKING A COPY IN ONE OF THREE SIZES OF X-RAY FILM

Norman L. Bartlett, 7017 E. 66th Ct., Tulsa, Okla. 74133

Filed Oct. 26, 1979, Ser. No. 88,545
Int. Cl.[3] G03B 27/52
U.S. Cl. 355—63 1 Claim



1. An apparatus for making a photographic reduction of various sized film negatives having a light box, an upper housing positioned above said light box and being provided with an opening in the bottom thereof, a camera spaced within said housing and in communication with said opening, and a film container, with film mounted therein, being attached to said housing in optical communication with said camera; said light box comprising: a cabinet with a plurality of light sources spaced therein, and

a translucent panel attached to the top of said cabinet;

said camera comprising:

a first open-ended housing;

a second open-ended housing spaced within said first housing and being adapted to slide there within;

a primary lens, diaphragm, and shutter means in optical alignment with said film;

at least two secondary lenses, each of different focal lengths mounted within said second housing above said primary lens, each of said secondary lenses being individually positioned within said camera from a first position out of optical alignment with said primary lenses to a second position in optical alignment therewith;

means to provide movement to said second housing;

means to pivot said secondary lenses;

means to advance said film; and

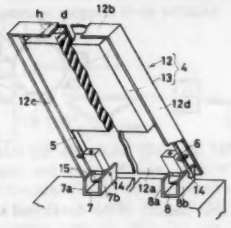
control means mounted within said apparatus to place said second housing and said secondary lenses in predetermined positions to produce a reduced image upon said film for each of various sized film negatives, a secondary camera mounted to said first housing of said camera whereby identification information is exposed on a peripheral portion of said film simultaneously as an exposure is made by said camera.

4,365,893

SUPPORTING MECHANISM OF A DOCUMENT COVER LID FOR A COPYING APPARATUS

Hiroshi Kimura, Neyagawa; Masahiko Hisajima, Osaka; Yutaka Shigemura, Takarazuka, and Yoichiro Irie, Suita, all of Japan, assignors to Mita Industrial Company Limited, Osaka, Japan

Filed Dec. 18, 1980, Ser. No. 218,013
Claims priority, application Japan, Dec. 21, 1979, 54-167022
Int. Cl.[3] G03B 27/62
U.S. Cl. 355—75 8 Claims



1. A supporting mechanism for supporting a document cover lid of a copying apparatus of the type wherein the cover lid is movable between a lowered position covering an upper surface of the copying apparatus and a raised position uncovering the surface, said supporting mechanism comprising:

a support member adapted to be fixed to a cover lid and having a base;

means for mounting said base of said support member on an upper portion of a copying apparatus so that said support member is pivotally movable about a horizontal axis;

a positioning member adapted to be mounted on the upper portion of the copying apparatus, said positioning member having a cylindrical first friction surface formed by a peripheral surface of said positioning member, said peripheral surface being arranged coaxially about a center line of said positioning member extending parallel to said horizontal axis;

a contact member mounted on said support member and movable therewith, said contact member having a partially cylindrical second friction surface extending parallel to said horizontal axis;

means for biasing said contact member toward said positioning member such that said second friction surface is in contact constantly with said first friction surface; and

said positioning and contact members being positioned and dimensioned such that, when said support member is pivoted about said horizontal axis to the lowered position of the cover lid, said first and second friction surfaces are in mutual contact at a position lower than a horizontal line extending transversely through said center line of said positioning member, and said biasing means and said contact member thereby create a force adapted to press the cover lid downwardly against the upper surface.

4,365,894

METHOD FOR CONTROLLING TONER CONCENTRATION

Hiroya Nakamura, Hachioji, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Japan

Filed May 28, 1980, Ser. No. 154,146
Claims priority, application Japan, May 31, 1979, 54-66856
Int. Cl.[3] G03G 15/00, 27/32
U.S. Cl. 355—77 3 Claims

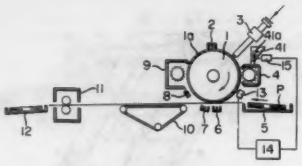
1. A method of controlling the concentration of toner used in an electrophotographic recording apparatus having a member for receiving and retaining an electrostatic image, reproducing means for receiving information supplied in the form of an electric signal and for impressing an electrostatic image of

said electric signal information on said member, and a developing means for developing an electrostatic image carried on said member, said method comprising the steps of:

energizing the reproducing means to form a reference density region on said member,

synchronizing the energization of said reproducing means with the signals supplied thereto so that the electrostatic image and the reference density region are sequentially formed on said member.

developing the reference density region by the same means for developing the electrostatic image,



sensing the toner density of the developed reference density region,

producing signals representative of the sensed toner density,

comparing said produced signals with signals representative of a desired toner density,

producing a signal representative of the difference between the signal representative of said sensed toner density and the desired toner density,

adding toner in accordance with said last-mentioned signal and

varying at least one parameter of the reference density region in accordance with said last-mentioned signal.

4,365,895

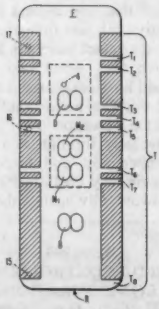
METHOD, APPARATUS AND FILM STRIP OF PARTICULAR DESIGN FOR RAPID TEST OF A FILM PROCESSOR

Gary S. Shaber, Villanova, Pa., and Charles W. Buenzli, Jr., Richardson, Tex., assignors to Probex, Inc., Villanova, Pa.

Filed Dec. 3, 1980, Ser. No. 212,742

Int. Cl.³ G01N *21/86, 21/59*

U.S. Cl. 356—444 **13 Claims**



1. In a method for determining the status of a photographic film processor said method including the steps of

a. exposing a test pattern on the film to produce, upon development, at least three test areas comprising a high density area, a medium density area and an unexposed base fog area

b. developing said film in said processor

c. measuring the density of said high density area portion of the film with a density measuring means in which said film is received to determine if it is too light, or acceptable; measuring the density of the base fog area to determine if it is too dark or acceptable; measuring the density of the medium density area to determine if it is too light, too dark, or acceptable

d. logically operating upon the results of step (c) by utilizing said results as inputs to logic circuitry to produce the output indications indicative of the operational status of the film processor,

the improvement consiting of: determining a first reference output signal strength of the density measuring means with no film received therein; determining additional reference output signal strengths ratiometrically related to said first reference signal strength, said additional reference signal strengths being indicative of predetermined limits of densities of said film test areas; and measuring said film test area densities sequentially with a single density measuring means and comparing the densities measured thereby with said additional reference output signal strengths.

4,365,896

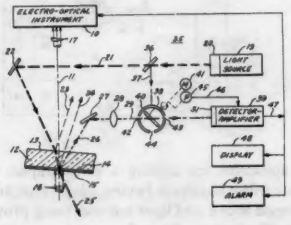
OPTICAL ATTENUATION MONITOR SYSTEM AND METHOD

Frederick A. Mihalow, Allentown, Pa., assignor to Bethlehem Steel Corp., Bethlehem, Pa.

Filed Apr. 3, 1980, Ser. No. 136,847

Int. Cl.³ G01N *21/47*

U.S. Cl. 356—446 **26 Claims**



1. Optical attenuation monitor apparatus for determining the surface condition of a radiation transmissive viewing window, comprising:

(a) means for producing a main light beam of monochromatic radiation and directing same angularly through said window from a first side to a second side where variable light-scattering attenuating objects also collect on the second surface and produce light radiation backscatter of the same wavelength, all reflected and refracted radiation from said main light beam being undetected;

(b) collecting only the light radiation backscatter from the second side surface through said window and causing same to form a variable-intensity light radiation backscatter beam; and

(c) light radiation detector means responsive only to the light radiation backscatter beam for producing an output signal that varies as a function of the window second side surface attenuation condition.

4,365,897

SEPARABLE BLADE AGITATOR WITH CLIP-ON IMPELLERS

Franklyn J. Amorese, 39 Peck Rd., Greece, N.Y. 14468, and Vincent J. P'arulli, 86 Cherry Creek La., Greece, N.Y. 14626

Continuation of Ser. No. 52,809, Jun. 28, 1979, abandoned. This application May 20, 1981, Ser. No. 265,526

Int. Cl.³ B01F *13/00*

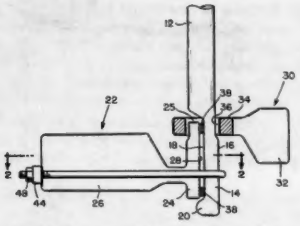
U.S. Cl. 366—343 **6 Claims**

1. A separable blade agitator comprising:

(a) a glass coated shaft terminating as an axially extending mounting shaft,

(b) a first glass coated impeller mounted to said mounting shaft and including an axially extending mounting base portion corresponding with said axially extending mounting shaft,

(c) a second glass coated impeller mounted to said mounting shaft and including a hub defining an axial bore embracing said mounting shaft and said mounting base portion of said first impeller, and



(d) spacer means disposed between said mounting shaft and the ends of said mounting base portion of said first impeller to space said mounting shaft and said mounting base portion apart by an amount to effect an interference fit of said hub over said mounting shaft and said mounting base portion, whereby said hub compresses said mounting base portion and said mounting shaft toward each other, between said spacer means, to rigidly clamp said shaft and said first and second impellers together.

4,365,898

TIME-CORRECTING MECHANISM FOR ELECTRONIC TIMEPIECE

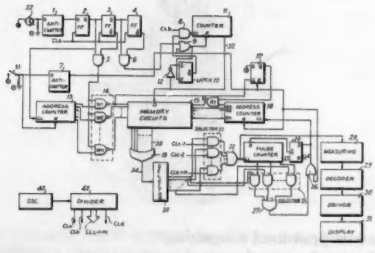
Youichi Wakai, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Continuation-in-part of Ser. No. 99,170, Nov. 30, 1979, abandoned. This application Jan. 31, 1980, Ser. No. 117,413

Claims priority, application Japan, Dec. 5, 1978, 53-150858; Feb. 2, 1979, 54-11729

Int. Cl.³ G04C *9/00*

U.S. Cl. 368—187 **19 Claims**



1. A time-correcting mechanism for a digital electronic timepiece having a high-frequency standard oscillator and a divider network receiving signals therefrom, said divider network outputting lower-frequency clocking and time-keeping signals, time-measuring circuits and means for display, comprising:

rotary switching means including contacts, said contacts opening and closing to produce switching signals when said rotary switching means is rotated;

circuit means for sensing said switching signals and determining the speed of rotation of said rotary switching means;

circuit means for inputting supplemental pulses into said time-measuring circuits for correcting said display, said supplemental pulses being provided by said divider signals, the number of said supplemental pulses being selected in correspondence with said rotational speed of said rotary switching means; and

memory means for storing rotational speed data generated by said circuit means for sensing rotational speed, said circuit means for inputting supplemental pulses being adapted to read-out said stored data after said rotary switching means is stopped from rotating.

4,365,899

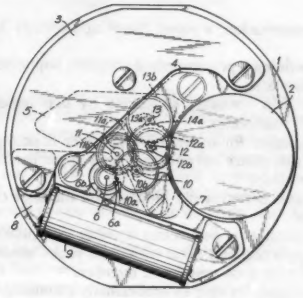
GEAR TRAIN OF AN ELECTRONIC TIMEPIECE

Kenichi Ushikoshi, and Imao Hiraga, both of Suwa, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Continuation of Ser. No. 862,480, Dec. 21, 1977, abandoned. This application May 19, 1980, Ser. No. 151,075

Int. Cl.³ G04B *19/02*

U.S. Cl. 368—220 **11 Claims**



1. Gear train of an electronic timepiece including a rotor, a battery for powering said rotor, a time-standard generator, time-indicating hands including at least a seconds hand, a plate and an opposed bridge for holding the pivots of the gears in said gear train, said plate having an outer edge, said gear train comprising a plurality of wheel composites in successive stages for transferring the power of said rotor to said time-indicating hands, each of said wheel composites including a wheel and a smaller pinion fixed to a common pivot for rotation together, one of said wheel composites being a seconds wheel composite including a seconds wheel, also termed a fourth wheel, for positioning said seconds hand and another of said composites including a wheel pinion at an earlier stage engaging said fourth wheel, an earlier stage being a component in said gear train between said fourth wheel and said rotor, and wherein said battery is disposed between said fourth wheel and said outer edge of said plate and the periphery of said battery lies proximate said fourth wheel composite and proximate said outer edge of said plate, the module of at least one of said fourth wheel and of said wheel pinion in the earlier stage engaged therewith is smaller than the modules of all other wheels in said gear train, a module of a wheel being the diameter of the pitch circle divided by the number of gear teeth in same, said fourth wheel having a number of teeth greater than at least 30, and all of the wheel composites constituting the gear train being supported on the common pivot to said plate and said opposed bridge.

4,365,900

PRINTING PLANE ADJUSTING MECHANISM

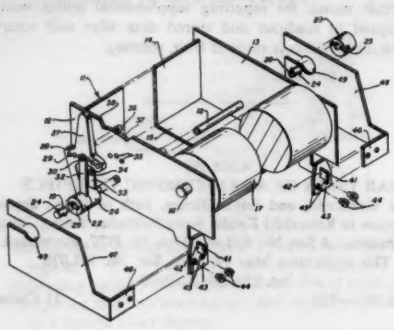
Helmut Gottsmann, Nuremberg, and Rolf Theilen, Furth, both of Fed. Rep. of Germany, assignors to Triumph Adler, A.G., Nuremberg, Fed. Rep. of Germany

Filed Oct. 2, 1980, Ser. No. 193,394

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1980, 3008539

Int. Cl.³ B41J *11/20*

U.S. Cl. 400—57 **2 Claims**



1. In combination, a paper handling assembly having side plates,

a platen defining a printing plane rotatably supported between said side plates,

a control shaft rotatably supported by said paper handling assembly side plates,

a frame member for mounting said paper handling assembly having side plates outwardly of said paper handling assembly side plates,

circular cams eccentrically mounted on the ends of said control shaft,

circular openings in said frame member side plates for rotatably supporting said cams when said paper handling assembly is mounted on said frame member,

one of said cams having an arm radially extending therefrom,

an adjusting lever rotatably mounted on said control shaft adjacent said arm,

locking detent means on said arm and said lever for adjustably locking said lever to said arm at a predetermined angular orientation thereby, when said said paper handling assembly is mounted on said frame, to establish a predetermined normal position of said paper handling assembly relative to said frame member, and

handle means on said lever for rotating said lever and via said arm said control shaft to adjustably position said paper handling assembly relative to said frame member.

4,365,901

MATRIX PRINTER WITH AUTOMATIC PRINTING HEAD ADJUSTMENT

Lothar Haubrich, Siegen, and Heinrich Dürr, Wilnsdorf, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 22, 1981, Ser. No. 266,570

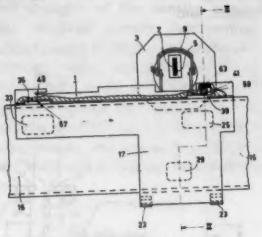
Claims priority, application Fed. Rep. of Germany, May 22, 1980, 3019515

Int. Cl.³ B41J *3/12*

U.S. Cl. 400—124 **5 Claims**

1. A matrix printer having a combination of a carriage and a printing head which is mounted thereon, said combination being movable to and fro along a paper guide, said printing head having a first printing position for printing character elements during a pass from left to right and a second printing position for printing character elements during a pass from right to left, the character elements of a given printing element in the printing head printed on the paper during the movement of the printing head to the right being displaced over a distance which amounts to a part of the vertical distance between two successive printing elements in the printing head with respect to the character elements of the same printing element which are printed on the paper during the movement to the left, characterized in that:

a chamber is formed by the combination of said carriage and said printing head;



a position changer is located within said chamber; and said printer further includes:

means to displace said position changer relative to said combination by a variation of the impulse of movement of the printing head, the printing head being in one printing position before said inpulse variation and in another printing position after said impulse variation.

4,365,902

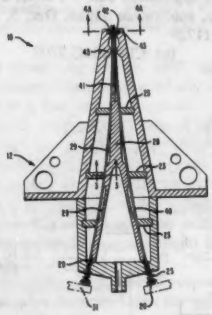
WIRE MATRIX PRINT HEAD

Horst H. Biedermann, Augsburg; Ferdinand Hermann, Neuaess; Ernst Pechinger, Meitingen, and Emil L. F. Sereinigg, Augsburg, all of Fed. Rep. of Germany, assignors to NCR Corporation, Dayton, Ohio

Filed Jun. 22, 1981, Ser. No. 276,440

Int. Cl.³ B41J *3/12*

U.S. Cl. 400—124 **2 Claims**



1. A wire print head comprising:

an elongated, tapered, central member having a plurality of recessed portions spaced longitudinally along the outer surface thereof;

a plurality of relatively laterally outwardly extending portions spaced longitudinally along the outer surface of the tapered, central member, the recessed portions alternating with the outwardly extending portions along the central member, and each of the relatively outwardly extending portions having a plurality of laterally open longitudinal grooves extending therealong and aligned with corresponding laterally open longitudinal grooves of at least one other of the laterally extending portions;

a plurality of print wires, each of the print wires being positioned in a set of the aligned grooves in the laterally outwardly extending portions, each of the sets of aligned grooves defining a substantially planar curve;

a plurality of print wire bridge members spaced apart longitudinally along the elongated, tapered, central member, each of the bridge members being opposite one of the laterally outwardly extending portions, respectively, and comprising a cap across the laterally open grooves in the respective laterally outwardly extending portion for retaining each of the print wires easily slidable within its respective groove in the respective laterally outwardly extending portion;

means for imparting axial movement to selected ones of the print wires to effect printing, each of said wires having a printing end and an opposite end, the printing ends of the wires being located in two closely spaced parallel rows and the opposite ends of the wires being spaced outwardly and apart from each other, each of the sets of laterally open longitudinal grooves accommodating one of the print wires being located to be along a planar curve between the print end of the wires and the opposite end thereof;

a thin, substantially flat spacer positioned between the two parallel rows close to the print end of the wires to maintain the two rows substantially parallel to each other; and

wire guide means positioned on opposite sides of the parallel rows to maintain the wires in each of the rows in a fixed, laterally spaced relationship.

4,365,903

LOCKABLE KEY WITH LUMINESCENT DISPLAY FOR OFFICE TYPEWRITERS AND TELEPRINTERS

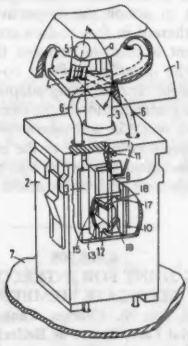
Karl S. Zeller, and Heinz Thormann, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 19, 1980, Ser. No. 179,547

Claims priority, application Fed. Rep. of Germany, Aug. 22, 1979, 2933983

Int. Cl.³ B41J *5/12, 29/18*

U.S. Cl. 400—490 **4 Claims**



1. A key with luminescent display for use in keyboard arrays comprising:

a depressible hollow key button at least partially comprised of light-transmissive material and having a slide extending downwardly therefrom;

a key base slidably receiving and supporting said slide and having a bias means normally urging said key button to a non-actuated position;

a circuit board having a light emitting diode mounted thereon which is received in said hollow key button, said circuit board having a pair of recesses respectively disposed at sides thereof;

a pair of flexible wires extending through said key base and through said recesses in said circuit board into said hollow key button and electrically connected to said circuit board inside said key button for supplying power to said light emitting diode, said flexible wires forming a crossed-over loop between said circuit board and said key base; and

a means for temporarily connecting said flexible wires to a source of power upon depression of said key button.

4,365,904

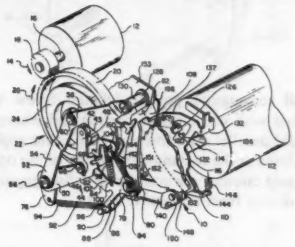
LINESPACING APPARATUS

Hans W. Mueller; Richard E. Shattuck; Albert H. Cryder, all of Cortland, and John L. Nelson, Ithaca, all of N.Y., assignors to SCM Corporation, New York, N.Y.

Filed Apr. 14, 1981, Ser. No. 254,034

Int. Cl.³ B41J *19/92*

U.S. Cl. 400—568 **6 Claims**



1. A linespacing apparatus for linespacing a platen including an electric motor, slip clutch means, driving connection means connecting the electric motor and the slip clutch means, cam means, linkage means including a cam follower driven by the cam means, and ratchet means mounted on the platen engaged and rotated by the linkage means for rotating the platen a selected amount in response to rotation of the electric motor, the cam means comprising:

a face cam having a first profile surface to engage and drive the cam follower;

said face cam having a second profile surface which includes an abutment wall portion engaged by the cam follower to limit rotating motion of said face cam for limiting the drive of the linkage means; and

said first profile surface includes a straight wall portion forming an initial position for the cam follower, said straight wall portion and said abutment wall portion form a passageway for the cam follower to move from said abutment wall portion to said straight wall portion.

4,365,905

CLAMPING DEVICE FOR FORM FEED MECHANISMS

Werner Jung, Morton Grove, Ill., assignor to Teletype Corporation, Skokie, Ill.

Filed Aug. 21, 1980, Ser. No. 180,212

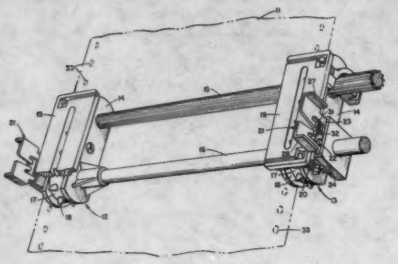
Int. Cl.³ B41J *11/32;* **A44B** *21/00*

U.S. Cl. 400—616.2 **2 Claims**

1. A printer tractor having a frame and an endless belt for advancing a record medium through a printing machine, said printer tractor mounted on a guide shaft extending through said frame, and said printer tractor being laterally movable along said guide shaft for adjustment of position to accommodate different widths of said record medium, the printer tractor including a clamping device comprising:

a one piece metal stamping including two parallel arms each having a free end extending in a first direction and each arm being a mirror image of the other, and a member joining said two arms, said joining member having a substantially circular shape and located between and apart from said arms, said joining member and said parallel arms defining a keyhole shaped opening facing in the opposite

direction from said first direction, said keyhole shaped opening includes a substantially circular portion having a diameter sufficiently smaller than the diameter of said guide shaft so as to insure a positive interference fit between said clamping device and said guide shaft and a



small rectangular portion located below and interconnected with said circular portion and wherein movement of said parallel arms towards each other applies a separating force at the rectangular portion of the opening enlarging said circular portion thereby disengaging said clamping device from said guide shaft.

4,365,906

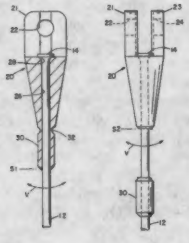
RIGGING TERMINAL ASSEMBLY

Kenneth L. King, 100 Robin Rd., Weston, Mass. 02193

Filed Mar. 2, 1981, Ser. No. 239,549

Int. Cl.³ F16D *9/00*; F16P *5/00*

U.S. Cl. 403—2 **5 Claims**



1. A sailboat rigging fatigue indicating terminal assembly for receiving and retaining the end of a tensioned metal rigging rod or the like subject to fatigue caused by vibration, comprising

a fitting having securing means at its securing end and an internal bore extending from its opposite rod receiving end toward said securing end surrounding and securing said rod and having

at its rod receiving end a fatigue indicating portion defined by a weakened area spaced inwardly from its rod receiving end

whereby

breakage of said fitting at said weakened area releases said fatigue indicating portion from the remainder of said fitting to indicate decreased fatigue life of said rod.

4,365,907

FASTENING DEVICES

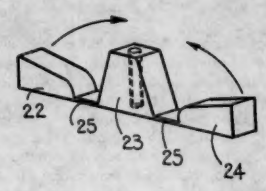
George A. Berry, Ashwell, England, assignor to International Computers Limited, London, England

Continuation of Ser. No. 813,518, Jul. 7, 1977, Pat. No. 4,190,375. This application Nov. 24, 1978, Ser. No. 963,211

Claims priority, application United Kingdom, Jul. 23, 1976, 30714/76

Int. Cl.³ F16B *7/00*

U.S. Cl. 403—12 **1 Claim**



1. An internally fitting re-usable fastening device of unitary construction comprising; a central block-like wedge element having a bottom surface and a top surface both such surfaces being of rectangular cross-section and two pairs of opposed side-walls, the walls of one such pair being inclined inwardly from the bottom surface to the top surface to provide relatively inclined first wedge surfaces; two similar end block-like wedge elements each including a base surface and a top surface of rectangular cross-section which is inclined to the base surface to provide a second wedge surface; and a flexible connection between the wider end of the central element and the narrower end of each of the end elements, each flexible connection comprising a flexible web which extends the full length of the central block edge defined between the bottom surface and the adjacent inclined side and the full width of the narrower part of the wedge of the associated end element as a contiguous extension of said bottom and base surfaces, each such flexible web being of such length that the associated end element can be readily caused to abut the central element to provide an operative setting in which the respective first and second wedge surfaces thereof in face-to-face contact and such that relative movement is possible between the central and end elements along the directions of the co-operating wedging surfaces, said central element being adapted to receive means whereby following introduction of the element on to the end of a tubular member when in said operative setting the central element can be displaced relative to the end elements so that the relative displacement forces the end elements outwardly into locking engagement with the adjacent walls of the tubular member.

4,365,908

FOLDING JOINT FOR INTERCONNECTING ELONGATE MEMBERS

Robert Thiboutot, Lac St. Charles, Canada, assignor to Les Entreprises Rotot Ltee, Comte de Bellechasse, Canada

Filed Dec. 17, 1980, Ser. No. 217,219

Int. Cl.³ F16C *11/00*; F16D *1/12, 3/00*

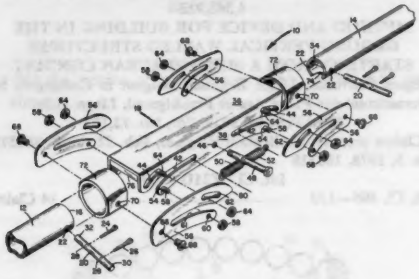
U.S. Cl. 403—102 **6 Claims**

1. A joint for interconnecting confronting end portions of two elongate members so that the elongate members are movable between a first position in which the elongate members are coaxial and their confronting end portions are spaced a first predetermined distance from each other and a second position in which the elongate members are parallel with each other and spaced apart by a second distance greater than said first predetermined distance, said joint comprising:

a central block member having a base and a flange protruding downwardly from a side edge of the base, the flange having a pair of guide passages formed therein that extend

inwardly and upwardly from lower outer edges thereof and respective cam slot formed within the flange above each of the entrances to the guide passages;

a guide member pivotally connected to each lower outer edge of said flange below the entrances to the guide passages, each guide member having a guide passage with an entrance that communicates with the entrance to one of the guide passages in the flange and a cam slot that at least partially overlaps the respective cam slot in the flange, the guide passages in the flange and guide member cooperating with each other to define a guide path traversing 90°, the cam slots in the flange and guide member being shaped to cooperate with each other to limit movement of said



guide member to positions corresponding to the first and second positions of the elongate members;

a pin received in and cooperating with overlapping portions of said cam slots for limiting movement of said guide member;

follower means carried by the confronting end portion of each elongate member received in said guide path for guiding movement of the elongate member between its first and second positions;

guide means for slidably receiving and guiding said elongate member;

means for connecting said guide means to said guide member; and holding means for releasably holding said elongate members in said first positions.

4,365,909

COUPLING CLAMP AND A METHOD OF MANUFACTURE THEREFOR

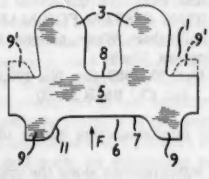
Gerard Stephan, Croissy, France, assignor to Nadella, France

Filed Nov. 9, 1979, Ser. No. 92,841

Claims priority, application France, Nov. 15, 1978, 78 32226

Int. Cl.³ F16C *11/06;* **F16D** *1/12;* **F16J** *1/16*

U.S. Cl. 403—157 **11 Claims**



1. In a coupling device which is made from a single piece of a sheet metal or tubing blank and comprises an axially extending tubular body portion which defines a socket for axially receiving a transmission member, and two spaced-apart lugs which extend from said body portion and define an axially extending throughway slot in said body portion and are provided for receiving clamping means for urging said lugs toward each other for clamping said body portion onto said transmission member; the improvement comprising an integral tab on at least one of said lugs which tab extends directly toward said other lug a distance less than the width of said slot in a plane substantially perpendicular to said tubular body.

4,365,910

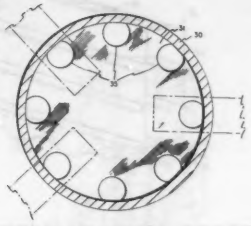
STRUT SUPPORT APPARATUS

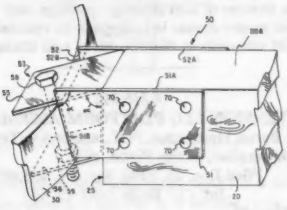
R. Gary Ford, Memphis, Tenn., assignor to Steelcraft Corporation, Memphis, Tenn.

Filed May 15, 1980, Ser. No. 178,393

Int. Cl.³ F16D *1/00, 3/00*

U.S. Cl. 403—172 **18 Claims**





1. Apparatus for joining a plurality of struts at a vertex, comprising:

a plurality of strut supports, each including: a pair of substantially parallel spaced side plates for receiving and securing one of said struts with a longitudinal face of said strut aligned with a pair of longitudinal edges of said side plates, and a clamp having a generally rectangular base plate mounted and secured across said side plates and substantially perpendicular to said longitudinal edges of said side plates such that an end face of said strut can abut against said base plate, said clamp having a pair of generally parallel flanges extending away from said strut at an oblique angle with respect to said base plate; and

a tubular hub to which a plurality of said clamps are joinable by engaging said hub within the flanges of said clamps;

whereby each strut is joinable to said hub at an angular relationship with respect to the plane of said hub that is defined by said oblique angle.

4,365,911

SURFACE DRAINAGE CULVERT

Shelton R. Rossberg, Houston, Tex., assignor to Ramco Steel, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 168,309, Jul. 10, 1980. This application Jul. 16, 1981, Ser. No. 284,065

Int. Cl.³ E02B *11/00;* **E01F** *5/00*

U.S. Cl. 405—43 **24 Claims**

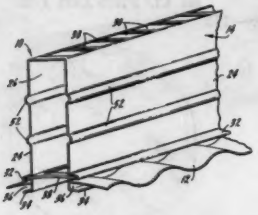
1. In a surface drainage culvert comprising a pipe section which is cut longitudinally forming an aperture along its upper surface and having an upstanding, longitudinal grate assembly received within the aperture, the improvement comprising

a. the aperture consisting of a plurality of longitudinally

spaced slots in the pipe with unslotted pipe portions separating each said slot,

b. said grate assembly consisting of

i. a pair of spaced, parallel sidewalls extending outwardly from the pipe above said aperture, said sidewalls forming therebetween an inlet drainage passage which accepts drainage water inflow at the top of the passage and discharges drainage water through said aperture into the pipe section at the bottom of the passage,



ii. stiffener means at the top of said drainage passage extending between said sidewalls to maintain the spacing of said sidewalls at the top of said drainage passage, and

iii. a longitudinal guide formed in said sidewalls adjacent the bottom of said drainage passage, and

c. spacer means situate in said guide to maintain the spacing of said sidewalls at the bottom of said drainage passage.

4,365,912

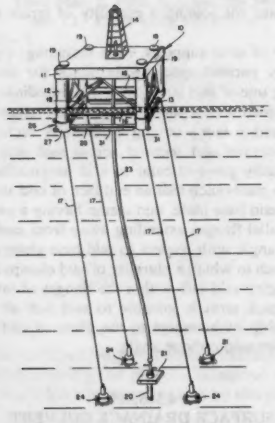
TENSION LEG PLATFORM ASSEMBLY

Robert B. Burns, Huntington, N.Y., assignor to Texaco Development Corporation, White Plains, N.Y.

Filed Dec. 22, 1980, Ser. No. 218,607

Int. Cl.³ E02B *3/00, 15/04*

U.S. Cl. 405—60 **10 Claims**



1. The combination with a tension leg marine structure adapted for drilling a well bore into the ocean floor at a drilling site in an offshore body of water, and including;

a vessel having a buoyancy controlled hull,

a plurality of anchors positioned at the ocean floor in said body of water and spaced about said well bore,

hold down tensioning means extending between and detachably connecting said vessel hull with the respective plurality of anchors, to maintain the vessel in substantially vertical alignment with the well bore, of

a collar detachably depending from the hull and having guide means thereon adapted to slidably engage the hold down tensioning means, whereby said collar can be detached from the hull and controllably lowered to engage said anchors at the ocean floor and surround a well bore from which an uncontrolled stream of effluent fluid is flowing,

a cap having an enclosure thereon, which cap is adapted to be guidably lowered to the ocean floor and fixedly engage said collar, whereby to align said enclosure above said well bore thus confining said uncontrollably flowing effluent fluid stream.

4,365,913

METHOD AND DEVICE FOR BUILDING IN THE GROUND VERTICAL WALLED STRUCTURES STARTING FROM A SUBTERRANEAN CONDUIT

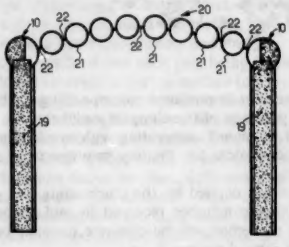
Jacques Bonvoisin, Liege, Belgium, assignor to Compagnie International des Pieux Armes Frankignoul, Liege, Belgium

Filed Feb. 14, 1979, Ser. No. 12,107

Claims priority, application Belgium, Feb. 21, 1978, 185318; Jun. 5, 1978, 188318

Int. Cl.³ E21D *9/04*

U.S. Cl. 405—132 **14 Claims**



1. A method of building in the ground vertical-walled structures, such as a subterranean tunnel, starting from the subterranean conduits, comprising the steps of: driving horizontally into the ground, two parallel lines of tubes, spaced a predetermined distance from one another; in constructing beneath each line of tubes corresponding vertical walls; and interconnecting the two lines of tubes through a certain number of intermediate parallel lines of tubes driven horizontally into the ground, in which the tubes are tightly connected to the parallel adjacent tubes in such a manner that the two parallel lines and the intermediate lines of tubes form the roof of a tunnel, to be formed between said vertical walls.

4,365,914

TRANSVERSE POST-TENSIONED TENDON INTERCONNECTING SYSTEM FOR MARINE FLOATS

Wesley W. Sluys, Bellingham, Wash., assignor to Builders Concrete, Inc., Bellingham, Wash.

Filed Oct. 20, 1980, Ser. No. 199,049

Int. Cl.³ B63B *35/00*

U.S. Cl. 405—221 **9 Claims**

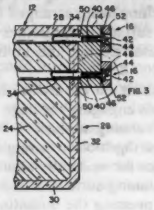
1. A system for interconnecting a row of marine floats, comprising:

respective rigid wales running along the upper side edges of said floats and extending between adjacent floats to bridge the junction therebetween;

a plurality of relatively thin tendons extending transversely through said floats, each terminating in respective fastening means for tensioning said tendons to force said wales against said floats, said tension causing sufficient elongation of said tendons to maintain a force between said wales and float as said wales undergo shrinkage; and

rigid shear-reinforcing sleeves surrounding at least some of said tendons and projecting into said wales to resist shear

forces generated between said floats and wales, said reinforcing sleeves being isolated from said fastening means so



that the tension of said tendons is not imparted to said sleeves.

4,365,915

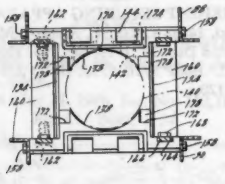
FLUID RAIL CONVEYING APPARATUS

John W. Neumann, Birmingham, Mich., assignor to Occidental Chemical Corporation, Warren, Mich.

Division of Ser. No. 822,428, Aug. 8, 1977, Pat. No. 4,144,021, which is a division of Ser. No. 649,836, Jan. 16, 1976, abandoned. This application Dec. 14, 1978, Ser. No. 969,426

Int. Cl.³ B65G *51/02*

U.S. Cl. 406—88 **5 Claims**



1. An apparatus for conveying articles comprising a framework, a plurality of longitudinally extending members defining a rail supported by said framework, each of the members formed with a supporting surface oriented in opposed relationship with respect to the supporting surface of the other side members and formed with a transverse configuration conforming substantially to the configuration of an article adapted to be conveyed therebetween, each of said members formed with a plurality of ports in the supporting surfaces thereof, means defining a plenum connected to said members and disposed in communication with the plurality of said ports therein, supply means for supplying a fluid under pressure to said plenum for discharge from said ports for supporting and conveying an article along said rail on a cushion of fluid in spaced relationship relative to said supporting surfaces, and baffles defining a shroud extending between said members along a portion of the length thereof to restrict escape of fluid discharged from said ports laterally between said supporting surfaces to impart an axial flow pattern to said fluid along the tunnel formed in both a forward and rearward direction with the rearward flow opposing the translatory movement of the articles being conveyed effecting a deceleration thereof upon approaching the upstream end of said shroud.

4,365,916

TURNING TYPE MULTI-SPINDLE ATTACHMENT

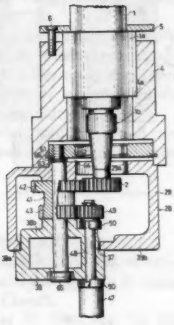
Eiji Miyakawa, Tokyo, Japan, assignor to Miyakawa Industry Co., Ltd., Seki, Japan

Filed Aug. 12, 1980, Ser. No. 177,475

Claims priority, application Japan, Feb. 26, 1980, 55-23999[U]

Int. Cl.³ B23B *39/20*

U.S. Cl. 408—46 **3 Claims**



1. A turning-type multi-spindle attachment for a drilling or tapping machine having a spindle in a spindle quill with an outer periphery, said attachment comprising:

a mounting cylinder **4** non-rotatably attachable to the outer periphery of the spindle quill **1**, said mounting cylinder having an axis, a central bore extending therethrough and a lower portion including a recess concentric with and larger in diameter than said central bore, said recess having an inner circumferential periphery;

a body **28** positioned relative to said lower portion such that a turning position thereof is adjustable, said body having an upper face;

a snap ring **61** mounted on said inner periphery of said recess, said snap ring having an upper face;

a support ring **62** positioned in said recess adapted to engage said upper face of said snap ring **61**, said support ring having a lower face;

a plurality of turnable members **38** rotatably mounted on said body **28**, each of said turnable members being in the form of a substantial cylinder having a central portion and being adapted to rotatably support a drill **51** or tap at a position eccentric to said control portion;

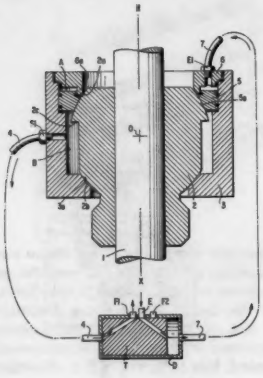
a plurality of mounting bolts **65**, each extending through said central portion of one of said turnable members and through said body and being threadedly inserted into said support ring from below, thereby adjustably mounting said turnable members to said body and said body to said mounting cylinder whereby, upon loosening of said bolts, said turnable members can be rotated relative to said body and said body can be rotated relative to said mounting cylinder and, upon tightening of said bolts, said body is clamped to said mounting cylinder and said turnable members are fixed to said body; and

a gear transmission mechanism housed in said body interconnecting the spindle to the drills or taps supported in the plurality of turnable members.

4,365,917
WORK-HOLDING DEVICE

Pierre Harmand, 9 Rue Malaz, F-74600 Seynod, France

PCT No. PCT/FR79/00124, § 371 Date Sep. 8, 1980, § 102(e) Date Sep. 8, 1980, PCT Pub. No. WO80/01365, PCT Pub. Date Jul. 10, 1980
PCT Filed Dec. 13, 1979, Ser. No. 214,001
Claims priority, application France, Jan. 8, 1979, 79 00310
Int. Cl.³ B23C 3/05
U.S. Cl. 409—201 6 Claims



1. An adjustable guide for a tool holder for use in high precision machining comprising:

a housing;

a guide seat located within said housing and having an internal surface;

a guide element positioned within said housing and having an internal surface, said guide element being movable with respect to said housing;

a casing disposed in said housing and positioned between said guide seat and guide element, said casing having a center portion and first and second end portions having outer surfaces shaped to mate with the internal surfaces of said guide seat and guide element respectively;

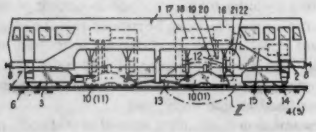
actuating means for engaging the internal surface of said guide element with the second end portion of said casing; and

means for delivering fluid to said housing, said casing having a lifting means contacted by said fluid, said fluid supporting said casing when the internal surface of said guide element is out of engagement with the second end portion of said casing to permit displacement of said casing to a predetermined position.

4,365,918
MOBILE RAIL CONTOURING MACHINE

Josef Theurer, Vienna, Austria, assignor to Franz Plasser Bahnbaumischenen Industriellgesellschaft m.b.H., Vienna, Austria

Filed Apr. 21, 1980, Ser. No. 142,441
Claims priority, application Austria, Aug. 14, 1979, 5537/79
Int. Cl.³ B23D 1/20; E01B 31/15
U.S. Cl. 409—296 19 Claims



1. A mobile rail contouring machine mounted on a railroad track for continuous movement in an operating direction, the track including two rails each having a rail head defining a gage side, a field side and a running surface, the gage and field sides extending from the running surface to a lower edge of the rail head, the machine being arranged for continuously removing such running surface irregularities as ripples, corrugations and overflow metal during the continuous movement and comprising

(a) a frame running on the track on undercarriages having flanged wheels engaging the gage and field sides in a zone adjacent the running surface,

(b) a rail contouring tool mounting linked to the frame,

(c) a drive means for vertically adjusting the mounting relative to the running surface of the rail head of one of the rails and for pressing the mounting thereagainst,

(d) guide roller means for vertically and laterally guiding the mounting along said rail head without play, the guide roller means including

(1) a guide roller laterally guiding the mounting along a selected one of the sides of the rail head and engaging the selected rail head side in a region extending from the lower edge to below the zone adjacent the running surface, and

(2) two additional guide rollers vertically guiding the mounting along the running surface of said rail head, the additional guide rollers engaging the running surface and each having an axis extending substantially parallel to the track plane,

(e) a rail contouring tool head including a tool holder, the tool head being mounted on the mounting for displacement in relation thereto and the tool holder including clamping means, and

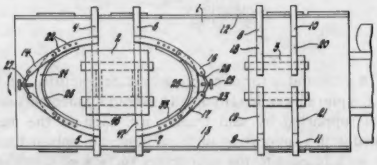
(f) a rail contouring cutting tool replaceably mounted in the clamping means of the tool holder, the tool holder detachably carrying

(1) a cutting blade having a cutting edge for planing a selected profile of the rail head.

4,365,919
FREIGHT SECURING APPARATUS

Larry L. Mehki, 14385 Cedar St., Monroe, Mich. 48161

Filed Dec. 19, 1979, Ser. No. 105,036
Int. Cl.³ B60P 7/10, 7/12; B61D 3/16, 45/00
U.S. Cl. 410—120 11 Claims



1. An apparatus for securing loads; comprising:

a structure adapted to vertically support a load;

first means connected to said structure for securing loads to said structure;

said first means including a pair of facing elongated unitary adjustable, cushioning load-contacting members;

each of said members being pivotally mounted on said structure adjacent a lower end of the respective members for movement in a vertical plane extending lengthwise of said structure and for simultaneous movement in an arc-like path with respect to said structure and with respect to the pivotal mounting of said member;

whereby said members can be moved simultaneously upwardly and inwardly with respect to a load carried on said structure;

second means interconnecting and extending between said load-contacting members of said first means for removably, adjustably and tightly securing at least a portion of

said adjustable cushioning load-contacting members against a load for removably, adjustably and tightly, securing said load to said external structure;

said second means comprising an elongated element movable lengthwise of at least one of said members and fastenable thereto at locations along the latter member;

adjustable means attachable to at least one of said members for urging said second means along one of said members;

whereby when said members are adjustably positioned with respect to a load carried on said structure, said second means can be urged along at least one of said members and said second means can be attached to the member it is urged along in a position such as to secure said members tightly against said load and said load against said structure.

6. An apparatus for securing loads, comprising:

first means connected to an external structure having a load thereon;

said first means including two first facing rigid arcuate members;

said two first facing rigid arcuate members each being pivotally mounted on said structure adjacent a lower end of the respective members for movement in a vertical plane extending lengthwise of said structure and for simultaneous movement in an arc-like path with respect to said structure and with respect to the pivotal mounting of said members whereby said members can be moved simultaneously upwardly and inwardly with respect to a load carried on said structure;

second means for removably and tightly securing at least a portion of said two first rigid arcuate members of said first means against said load; and

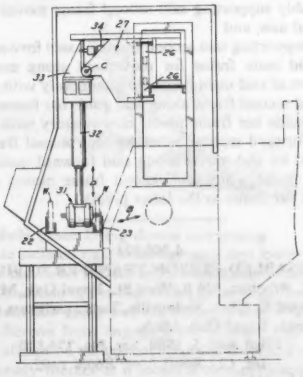
said second means extending between and interconnecting said two first rigid arcuate members and including a second rigid arcuate member which adjustably interconnects said two first rigid arcuate members for removably, adjustably and tightly securing said load against said external structure.

4,365,920

LOADER-UNLOADER SYSTEM FOR WORKPIECES

Wendell D. Morgan, Salem, Ill., assignor to Acco Industries, Inc., Trumbull, Conn.

Filed May 21, 1980, Ser. No. 152,108
Int. Cl.³ B66C *1/54*
U.S. Cl. 414—224 **15 Claims**



1. A loader-unloader system for loading and unloading workpieces into the holding means of a machine tool wherein each workpiece is held in position about a longitudinal axis during which various machine operations may be performed on the tool comprising

a loading means adapted to deliver articles in succession to a loading position,

an unloading means adapted to receive workpieces,

a loader-unloader assembly comprising

means defining a track extending along an axis parallel to the axis of the machine,

a carriage movable along said track means,

means for moving said carriage back and forth along said track means,

a loader-unloader head assembly mounted on said carriage,

means on said carriage for mounting said head assembly for movement into and out of position adjacent said holding means of said machine tool and for reciprocating movement toward and away from the said holding means,

said head assembly comprising a multiplicity of radially extending fingers,

means for mounting said fingers on said head assembly for generally linear movement radially toward and away from one another for gripping and releasing a workpiece,

comprising a multiplicity of levers pivoted on said head, each said level supporting a finger,

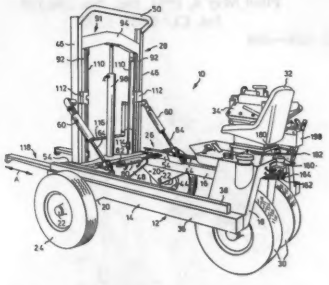
and means for moving said levers and thereby moving said fingers toward and away from one another in said generally linear path.

4,365,921

FORKLIFT VEHICLE

Gerardus J. Brouwer, Keswick, and William Arnold, Sutton West, both of Canada, assignors to Brouwer Turf Equipment Limited, Keswick, Canada

Filed May 29, 1980, Ser. No. 154,567
Claims priority, application Canada, Jun. 21, 1979, 330327
Int. Cl.³ B65G *67/04*
U.S. Cl. 414—347 **35 Claims**



1. A self propelled forklift vehicle comprising:

(a) a frame defining an elongated space open at one end thereof and extending to the ground,

(b) wheels mounted on said frame for supporting and driving said vehicle,

(c) a fork tower, and forks mounted on said fork tower,

(d) means mounting said fork tower on said frame with said forks positioned in said space and for horizontal movement of said fork tower on said frame,

(e) power means connected between said fork tower and said frame and operable for moving said fork tower on said frame to move said forks horizontally through said space,

(f) means connected between said fork tower and said forks for raising and lowering said forks and for driving said forks substantially below the level of the bottoms of said wheels, whereby to raise said vehicle above the ground on said forks, so that said vehicle can be moved by driving said forks below the bottoms of said wheels and then operating said power means to produce relative movement between said fork tower and said frame while said vehicle is thus raised.

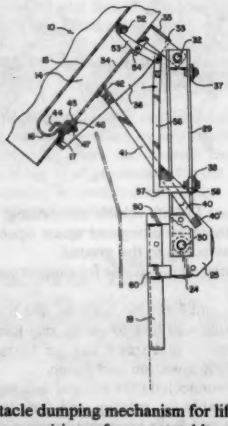
33. A vehicle comprising: a pair of forks facing outwardly for supporting a loaded pellet, said pallet being of predetermined length, said forks including retaining means for resisting movement of said pallet outwardly off said forks when said pallet is supported by said forks, means for moving said forks in a substantially horizontal plane inwardly and outwardly over a distance at least equal to said predetermined length, between an extended outer position and a retracted inner position, gate means movable between a first fixed position in which said gate means is located just above said pallet when said forks are in said extended position and blocks the contents of said pallet but not said pallet from moving inwardly and a second position in which said gate means does not obstruct movement of said pallet and its contents inwardly or outwardly, means for selectively moving said gate means between said first and second positions, and means operable for withdrawing inwardly said forks, with said pallet retained thereon, from said extended position to said retracted position while said gate means is in said first fixed position so that said contents of said pallet are blocked by said gate means from moving inwardly, thereby fully removing said pallet from beneath said contents and hence fully discharging said contents from said pallet.

4,365,922

SIDE-LOADING DUMP UNIT

Ernest D. Borders, Statesville, N.C., assignor to Rubbermaid Applied Products Inc., Statesville, N.C.

Filed May 4, 1981, Ser. No. 260,104
Int. Cl.³ B65F *3/02*
U.S. Cl. 414—406 **12 Claims**



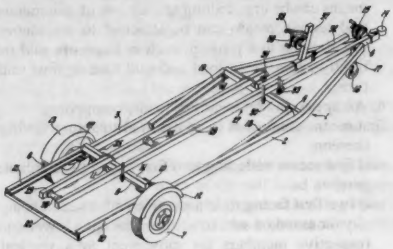
1. Receptacle dumping mechanism for lifting and inverting a receptacle, comprising a frame rotatably mounted on the side of a waste collector, a face plate pivoted on the bottom of said frame and having a saddle at its upper end, means to rotate said frame to lift and invert a receptacle supported on said saddle, and a push link pivotally connected at one end to the waste collector and at the other end to the face plate for swinging the upper end of the face plate away from the frame as the frame is rotated to lift and invert a receptacle supported on said saddle.

4,365,923

COMBINATION TRAILER/LAUNCHER FOR BOATS AND OTHER VEHICLES, AND METHODS OF CONSTRUCTING AND UTILIZING SAME

Renso Lubbers, Bokellia, Fla., assignor to Colu Industriez, Inc., Portage, Ind.

Filed Mar. 3, 1980, Ser. No. 126,558
Int. Cl.³ B60P *3/10*
U.S. Cl. 414—483 **11 Claims**



1. An apparatus for selectively loading and transporting and unloading an object comprising:

a main frame having means for transporting said apparatus;

a second frame for supporting an object, said second frame being movably supported by said main frame;

said main frame comprising a forward section and a guide bar frame pivotally connected to said forward section for pivotal movement about an axis transverse of said forward section and pivotal movement with respect to said second frame transverse of said second frame;

means movably supporting said second frame on said guide bar frame for movement of said second frame longitudinally of said main frame and along said guide bar frame transversely of said axis with said means movably supporting said second frame on said guide bar frame being movable from a location forwardly of said axis to a locations rearwardly thereof;

whereby upon movement of said second frame longitudinally relative to said main frame, said guide bar frame will pivot downwardly with respect to said forward section of said main frame when said means movably supporting said second frame on said guide bar frame moves rearwardly of said axis and said guide bar frame will pivot upwardly with respect to said forward section when said means movably supporting said second frame moves forwardly of said axis; and

means supporting said second frame on said forward sections of said main frame for movement along said forward section of said main frame simultaneously with movement of said second frame along said guide bar frame and while said guide bar frame pivots downwardly with respect to said forward section, whereby said second frame is supported by and moves along said forward section of said main frame while said second frame moves along said guide bar frame as the latter pivots.

4,365,924

DISABLED PERSON TRANSFER DEVICE

Maurice C. Brigman, 616 S. West St., Royal Oak, Mich. 48067, and Edward C. Sikes, Springville, Tenn., assignors to Maurice C. Brigman, Royal Oak, Mich.

Filed Aug. 1, 1980, Ser. No. 174,520
Int. Cl.³ B60P *1/48;* B60N *1/02*
U.S. Cl. 414—549 **11 Claims**

1. A device for transferring a person from a wheelchair to a vehicle having a door comprising:

a removable seat associated with the wheelchair;

an actuator adapted to be attached to the vehicle door; and

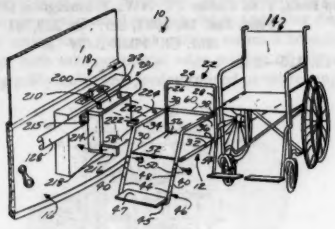
means for releasably engaging the seat with the actuator;

the actuator being movable relative to the door to move the seat into or out of the vehicle, the actuator comprising:

a pair of vertically-extending spaced tracks adapted to be mounted on the vehicle door;

a pair of vertically movable members slidingly engaging the vertically extending tracks and vertically movable therealong;

a pair of transversely movable members disposed parallel to each vertically movable member and vertically movable therewith;



an arm interconnecting each transversely movable member and an associated vertically movable member, each arm being hinged at opposed ends to the vertically movable member and the transversely movable member, respectively;

a horizontal track extending between and fixedly attached to the transversely movable members;

a horizontally movable member slidingly engaging and movable along the horizontal track; and

means for moving the horizontally movable member in a horizontal, vertical and transverse direction relative to the vehicle door.

4,365,925

MANHOLE COVER LIFTER

Sylvester A. Girtz, 8332 - 32nd Ave. North, Crystal, Minn. 55428

Filed Jul. 28, 1980, Ser. No. 172,668
Int. Cl.³ B66F *11/00*
U.S. Cl. 414—684.3 **1 Claim**

1. A manhole cover lifting device comprising

an elongate inclined rigid lever having a first lower end with fastener means for attachment to a manhole cover and also having a second upper end with a depending foot thereon to prevent the upper end of the lever and a workman's hands thereon from engaging the ground, and elongate handle affixed on the upper end of the lever and extending transversely thereof at a location in superposed relation with respect to the upper end of the handle,

a depending rigid strut affixed to the lever intermediate the ends and having a lower end with means mounting an elongate horizontal axle extending transversely of the strut and of the lever, said axle having a pair of ground engaging wheels thereon providing a fulcrum for the lever, both the lever and the strut being formed of rigid steel tubing and being welded together,

an elongate rigid steel insert bar concealed and affixed within the tubing of the rigid lever adjacent the depending strut and extending in both longitudinal directions along the lever from the strut,

an elongate lifter bar extending generally along the lever and in oblique relation thereto, one end of the lifter bar being affixed to the lower end of said strut and the other end of the lifter bar being affixed to the lower end of the lever, said lifter bar spanning across a distance approximating one-half the diameter of a manhole cover, and said fastener means including a rigid plate suspended upon a bail, said bail being secured to said first lower end of said lever said plate having an elongate slot through one side thereof to releasably receive an upright stud secured to the manhole cover,

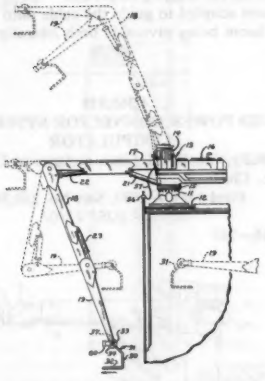
and means for securing said stud to the manhole cover, including an elongate rigid bar having a length approximating the diameter of a manhole cover, said stud being affixed to the bar approximately mid-way along the length of the bar, and said bar having a pair of depending hook-like protuberances depending therefrom for engaging recesses in the manhole cover for lifting the cover.

4,365,926

FREE-HANGING LOAD CARRIER FOR BOOM, WITH BRAKE

Wilburn K. Brown, Morton Grove, Ill., assignor to Pettibone Corporation, Chicago, Ill.

Filed Dec. 28, 1976, Ser. No. 755,051
Int. Cl.³ B66C *1/24*
U.S. Cl. 414—685 **4 Claims**



1. Material-handling apparatus including a boom-part and a lift fork hanging from the end thereof, and power means for manipulating the boom-part during use with a vertical angular swing substantially exceeding 180°;

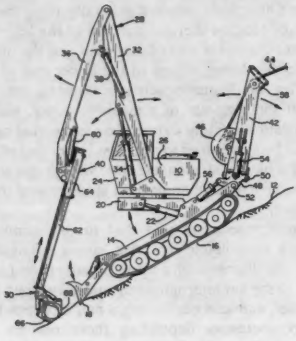
said lift fork being a rigid structure including tines for slipping under a load and extensions to a point above a mid-zone of the tine length at which the fork is pivotally suspended from the boom-part; a brake disc angularly locked to the lift fork and pivotal about the pivotal axis thereof; and braking means carried by the boom-part and operable by remote control for quick application at will for seizing the brake disc to lock the load carrier firmly to the boom-part at any one of a wide variety of angularities with respect thereto during material handling, and for quick full release to allow the load carrier to hang naturally.

4,365,927

SLASH RECOVERY SYSTEM

Ray B. Schenck, Box 94, Grays River, Wash. 98621

Filed May 2, 1980, Ser. No. 146,376
Int. Cl.³ B66D *3/00*; B66C *21/02*
U.S. Cl. 414—729 **5 Claims**



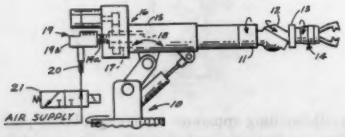
1. A vehicle for use with a cable anchored uphill on a logging slope comprising:
traction means supporting the vehicle for movement along the slope,
a winch mounted rearwardly on the vehicle for reeling in the cable to pull the vehicle uphill with assistance from the traction means,
a source of power carried on the vehicle for driving the traction means and the winch,
an elongated boom disposed on the vehicle and having means at an end remote from the vehicle for gathering slash from the logging slope, and
a tail boom adapted to guide the cable onto the winch,
the tail boom being pivotable both laterally and longitudinally.

4,365,928

FLUID POWER CONNECTOR SYSTEM FOR MANIPULATOR

Oliver L. Baily, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed May 4, 1981, Ser. No. 260,386
Int. Cl.³ B25J *17/02*
U.S. Cl. 414—735 **3 Claims**



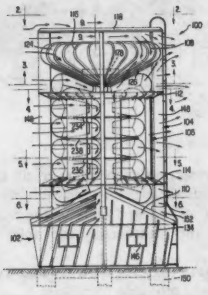
1. In a manipulator having a reference base, an end effector with a tool end movable with respect to said reference base, a multi-axis joint system linking said base to said end effector through a joint housing, an improved apparatus for connecting fluid motive power from said base to said end effector, wherein the improvement comprises:
(a) a plenum chamber within said joint housing, and said joint housing is split into a plurality of relatively movable housing parts;
(b) means for ducting fluid from a fluid source into said plenum chamber, said means for ducting fluid being connected to one of said plurality of housing parts;
(c) an end effector power train component connected to said housing and extending into said plenum chamber, said power train component being connected to another of said plurality of housing parts;
(d) a fluid duct within said power train component in fluid communication with said plenum chamber and said tool end of said end effector;
(e) means for sealing said component with said housing; and
(f) means for sealing said housing parts with one another.

4,365,929

VERTICAL WIND TURBINE POWER GENERATING TOWER

Philip Retz, 1783 Lanier Pl., NW., Washington, D.C. 20009

Filed Jan. 16, 1981, Ser. No. 225,781
Int. Cl.³ F03D *3/04*
U.S. Cl. 415—2 R **37 Claims**



1. A wind-power generating apparatus, comprising:
(a) a frame;
(b) a rotor mounted within said frame for rotation about a vertical axis of rotation, said rotor comprising a plurality of circumferentially spaced wind-gathering elements, including:
(i) a plurality of radially extending scoops arranged in columns; and
(ii) a plurality of radially extending curved blades; said blades and columns of scoops being alternately disposed about said rotor, and said rotor having an open axial center for allowing free air flow diametrically through said rotor; and
(c) air-flow channeling means for directing air flow toward said rotor.

4,365,930

ELECTRIC FAN

Masato Ogura; Noriyasu Horio, and Kinzo Suzuki, all of Nakatsugawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 5, 1981, Ser. No. 240,941
Claims priority, application Japan, Mar. 31, 1980, 55-42483[U]
Int. Cl.³ F03D *3/02*
U.S. Cl. 415—61 **6 Claims**

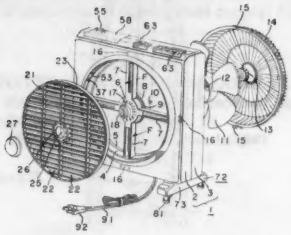
1. An electric fan which comprises:
a casing having an air supply opening formed at a front part of said casing and an air suction opening formed at a rear part of said casing and an air passage formed in said casing from said air suction opening to said air supply opening;
a plurality of fan blades placed in said air passage or near said air suction opening forming an inlet for providing air flow in said air passage from said air suction opening to said air supply opening during driving of said fan blades;
first motor means for driving said fan blades disposed in said casing;
an air directing grille for covering said front part of said air

supply opening of said casing, said air directing grille having a peripheral edge portion and supported on said casing in a gyratory manner and including a plurality of slits formed therein for distributing said air flow through said grille;

single rotating means placed in said casing for engaging said peripheral edge portion of said air directing grille;

second motor means for rotating said rotating means in said casing for turning said air directing grille via said rotating means;

means for applying and regulating said rotating means to said peripheral edge portion of said air directing grille within a predetermined pressure range and being disposed in said casing such that said rotating means is brought into contact with said peripheral edge portion of said air directing grille under said predetermined pressure range and



such that said pressure range ensures rotation of said rotating means upon jamming of said air direction grille, wherein said means for applying and regulating said rotating means further comprises;

a spring mounted to said front casing;

a fixture plate disposed on said front casing and connected to said spring;

means for pivotably connecting said fixture plate to said front casing; and

means for mounting said second motor means on said fixture plate such that said means for applying and regulating said rotating means ensures continuous contact between said peripheral edge portion of said air directing grille and said rotating means irrespective of surface irregularities or deformations in said peripheral edge portion of said air directing grille.

4,365,931

FLUID DISPLACEMENT DEVICE

Jorge P. M. Dellacha, Cramer 4538, Buenos Aires, Argentina

Filed Jul. 16, 1980, Ser. No. 169,344

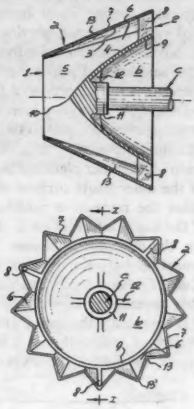
Int. Cl.³ F01B *1/36*

U.S. Cl. 415—90 **6 Claims**

1. A device for moving fluids comprising:

at least one rotatable covering defined by a tubular wall having a truncated configuration which has a minor base which defines a fluid inlet and a major base which at least partially defines a fluid outlet, said covering being provided with longitudinally-extending channel-forming ribs which begin at said inlet, get gradually deeper and end at said outlet; and

a core which is concentrically disposed relative to the axis of rotation of said covering and which has a surface of revolution which is disposed in a non-parallel manner to the wall of said covering and which converges progressively towards the same so as to define therebetween an annular channel tapering in a direction towards said major base of



said covering, the latter of which in cooperation with said core defines said fluid outlet.

4,365,932

PUMPING DEVICE FOR DIPHASIC FLUIDS

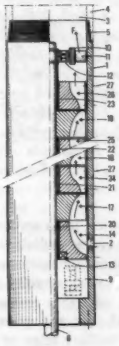
Marcel Arnaudeau, Paris, France, assignor to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Dec. 17, 1980, Ser. No. 217,294

Claims priority, application France, Dec. 17, 1979, 79 31031

Int. Cl.³ F04D *19/02*

U.S. Cl. 415—199.5 **14 Claims**



1. A pumping device for a diphasic fluid which comprises a liquid phase and an undissolved gaseous phase, this device comprising at least one hollow casing having inlet and outlet openings for the fluid, at least a rotor rotatably mounted in said casing, said rotor comprising a hub and at least a blade integral with said hub, said blade having a leading edge on the side of said inlet opening and a trailing edge on the side of said outlet opening, wherein a line representing the intersection of the outer surface of said blade with a cylindrical surface coaxial to said hub is inclined relative to a reference plane perpendicular to the rotor axis by a substatially constant angle having a first value throughout a first portion of the outer surface of said blade corresponding to about two thirds of the hub length, the line representing the intersection of the inner surface of said blade with said cylindrical surface having four successive portions, comprising a first portion of the inner blade surface

whereon the angle between the profile of the inner blade surface and the reference plane decreases from a second value to a third value greater than said first value, said first portion of the inner blade surface extending over substantially one third of the hub length, said second value being at most equal to 150% of said third value, a second portion of the inner blade surface whereon said angle is substantially constant and equal to said third value, said second portion extending over 30 to 40% of the hub length, a third portion of the inner blade surface whereon said angle continuously increases from said third value to a fourth value at most equal to twice said third value, said third portion extending over 10 to 20% of the hub length, and a fourth portion of the inner blade surface whereon the line of intersection of the inner blade surface with said cylindrical surface is such that the respective profiles of the inner and outer surfaces of the blade intersect each other on the trailing edge of the blade, the difference between said first and third values being comprised between 0° and 10°, the arithmetic average value of said first and second values corresponding to an angle whose trigonometric tangent is substantially equal to $\omega R/V_z$, wherein ω represents the speed of angular rotation of the hub, R the radius of said cylindrical surface, and V_z the axial flow velocity of the fluid at the level of the leading edge of the blade.

4,365,933

AXIAL VANE RING CONSISTING OF CERAMIC MATERIALS FOR GAS TURBINES

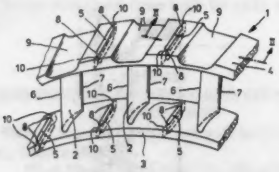
Manfred Langer, Gifhorn; Heinz Burfeindt, Wolfsburg, both of Fed. Rep. of Germany, and Patrick Stuart, London, England, assignors to Volkswagenwerk Aktienbesellschaft, Wolfsburg, Fed. Rep. of Germany

Filed Nov. 13, 1979, Ser. No. 93,815

Claims priority, application Fed. Rep. of Germany, Nov. 16, 1978, 2849747

Int. Cl.³ F01D 9/02

U.S. Cl. 415—217 **10 Claims**



1. A ceramic vane ring for a turbine, comprising a plurality of ceramic turbine vanes radially extending between and joined with radially inner and outer ceramic cover rings, each of said cover rings having a radial stress relief slit arranged between each vane, said slits extending substantially in the axial direction of said ring and arranged at least in the same axial location as the trailing edge of said vanes, and wherein the radially outer surface of said outer cover ring is provided with stress relief grooves in the vicinity of the junction of said vanes and said outer ring.

4,365,934

WIND MACHINE

H. Carl Mason, 4421 SW. Coast, Lincoln City, Oreg. 97367

Filed Jun. 15, 1981, Ser. No. 273,931

Int. Cl.³ F03D 7/06

U.S. Cl. 416—17 **6 Claims**

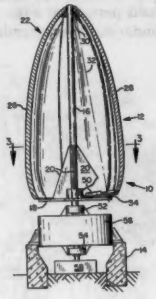
1. A wind-driven machine comprising:

an elongate hollow shell body disposed with the longitudinal axis thereof in an upright position, said body being shaped as a rounded cone and having the smaller diameter end thereof located over its larger diameter end,

an internal support for said shell body and means rotatably supporting the base of said support for rotation about an axis corresponding to the longitudinal axis of the body,

power-generating means connected to and driven by said support,

said hollow shell body being formed by plural elongate shell segments which follow one another in a direction extending circumferentially of the body and each segment extending from adjacent the top end to adjacent the bottom end of said body, each shell segment in longitudinal cross section curving outwardly and downwardly progressing downwardly from the top end thereof and in transverse cross section having a concave side facing inwardly and a convex side facing outwardly, each shell segment having



leading and trailing edges and being pivotally mounted for pivotal movement about an axis extending adjacent the trailing edge thereof from adjacent the top to adjacent the bottom of the shell segment between a closed position where the segment imparts part of the cone shape of the body and an open position where the trailing edge of the shell segment moves outwardly and the segment is disposed transversely of its closed position, an opening existing along the leading edge of the shell segment between the leading edge and said support with the segment moved from its closed position, and

means for producing pivotal movement of said segments rotated to rotational movement of said support.

4,365,935

WIND-DRIVEN PRIME MOVER

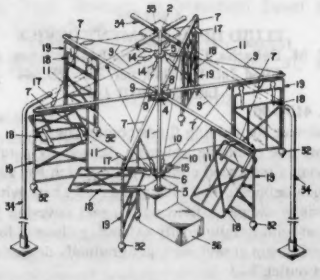
Chousei Zukeran, 7-20, Midori 1-chome, Tsurumi-ku, Osaka Osaka-shi, osaka-fu, Japan

Filed Dec. 10, 1980, Ser. No. 215,112

Claims priority, application Japan, Dec. 12, 1979, 54-161821

Int. Cl.³ F03D 7/06

U.S. Cl. 416—117 **5 Claims**



1. A vertical type wind-driven prime mover comprising a vertically extending main shaft rotatably supported in bearings, a plurality of horizontal support arms equispaced and radially extending from said main shaft, a rectangular wind

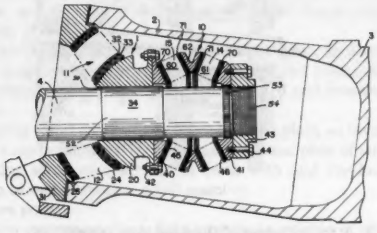
receiving plate support body frame pivotally connected to the outer end portion of each of said arms, a rectangular wind receiving plate pivotally connected to each of said support frame bodies so that these plates are swingable only on the same one side of the respective support frame bodies, and a weight attached to each of said support frame bodies to maintain the latter substantially vertical until the wind speed reaches a given value, wherein the sum of the horizontal widths of the wind receiving plates is approximately equal to the radius of rotation of said horizontal support arms and the vertical height of each wind receiving plate is ⅛–1 times said width; each wind receiving plate is pivotally supported by the associated wind receiving plate support frame body through a pivot bar at the transverse center of gravity of said wind receiving plate, and a counterweight is provided on the upper frame portion of the outer frame of said wind receiving plate; and said weight is removably mounted on the lower end of the outer frame of each wind receiving plate support frame body.

4,365,936

LAMINATED ELASTOMERIC BEARING UNIT

Seymour A. Hatch, Bensenville, Ill., assignor to Chicago Rawhide Manufacturing Company, Elgin, Ill.

Filed Dec. 6, 1979, Ser. No. 100,841
Int. Cl.³ B64C *27/38*
U.S. Cl. 416—134 A **18 Claims**



1. An elastomeric bearing assembly comprising

a first member adapted to be operatively coupled to the support shaft of a rotor blade mounted for rotation in conjunction with the hub of a helicopter and forming a first frusto-conical surface,

a second member adapted to be coupled to the shaft and forming a second frusto-conical surface spaced from said first surface,

a pair of frusto-conical elastomeric bearing sections disposed between said first and second surfaces,

one of said frusto-conical bearing sections being bonded to the first surface and the other section being bonded to the second surface,

said frusto-conical bearing sections each having a plurality of alternating and bonded frusto-conical layers of elastomeric and non-extensible material and having planar surfaces,

an intermediate member separating said first and second frusto-conical bearing sections,

said first and second frusto-conical bearing sections being arranged to receive the resultant force vectors from an applied load in a direction normal to the planar surfaces of said layers of elastomeric and non-extensible material,

said frusto-conical sections being disposed along an axis normal to said planar surfaces which is at an angle less than 45 degrees to an axis extending parallel to the support shaft of the rotor blade,

a spherical bearing section adapted to be coupled to the blade support shaft and mounted in serial relationship to said first and second frusto-conical surfaces, and

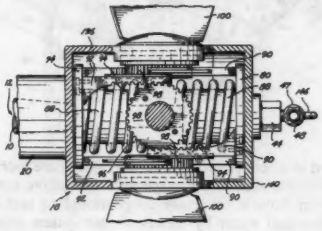
means forming a centering bearing operatively coupled to at least a portion of said spherical bearing section and in bearing relationship with the support shaft.

4,365,937

ADJUSTABLE PITCH PROPELLER DRIVE

Harold L. Hiebert, deceased, late of Port Townsend, Wash., and by Shirley M. Hoff, executrix, 31009 44th Ave. South, Federal Way, Wash. 98003

Continuation-in-part of Ser. No. 97,491, Nov. 26, 1979, abandoned. This application Apr. 22, 1981, Ser. No. 256,582
Int. Cl.³ B63H *3/08*
U.S. Cl. 416—157 R **68 Claims**



1. An adjustable pitch propeller comprising a hollow hub, a plurality of adjustable pitch propeller blades mounted on said hub, each of said blades having an inner portion which is located within said hub, and an improved mechanism for adjusting the pitch of said propeller blades, comprising:

a pair of axially movable abutments spaced axially apart within said hub;

compression spring means positioned between said abutments, with each end of said spring means bearing against one of said abutments, said spring means normally biasing both of the abutments axially outwardly;

a mechanical drive means interconnected between each abutment and the inner end portion of each blade, each said mechanical drive means functioning to apply a pitch changing rotational force on its blade in response to an axial movement of its abutment; and

means for applying an axially inward force on said abutments for moving both abutments axially inwardly together, in opposition to the force of said spring means, for the purpose of rotating the propeller blades in a first direction, with the energy that is stored in such spring means when it is compressed serving to rotate the propeller blades in the opposite direction when the axially inwardly directed force is removed from the abutments,

whereby movement of both abutments results in the spring means being compressed at each end.

4,365,938

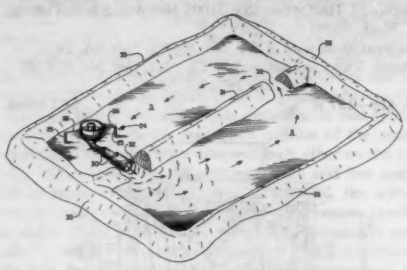
MODULAR LOW HEAD HIGH VOLUME WATER PUMP AND AQUACULTURE SYSTEM

Archie F. Warinner, P.O. Box 68, Sorrento, La. 70778

Filed Jan. 14, 1980, Ser. No. 111,721
Int. Cl.³ F04B *21/00*
U.S. Cl. 417—54 **2 Claims**

1. A method for culturing aquatic life in a contained body of water open to the atmosphere, said method comprising the steps of establishing a contained body of water having a central divider with openings at each end of said central divider for passage of water and aquatic life species, placing a low head, low flow-rate high volume modular floating water pump system in one of said openings, said modular floating water pump system comprising an anchored float means supporting water pump means having water intake means in communication with said water body, and outlet means communicating with a series of submerged concentrically disposed conduits in end to

end relation, each succeeding conduit having its outlet end interposed in the inlet end of the next larger conduit which inlet is open to said water body so that water flow through one conduit causes reduced pressure at said next larger conduit inlet thereby causing water in said body outside of said next larger conduit to flow into said next larger conduit inlet whereby the amount of water flowing through said conduit is



increased in direct proportion to the ratio of the increase in the cross-sectional area of the respective successive conduits and the rate of flow is inversely proportional to said ratio, and circulating said water by means of said system whereby said aquatic life can exist in a moving body of water which brings food and oxygen to said aquatic life and prevents water stagnation.

4,365,939

FUEL INJECTION PUMPING APPARATUS

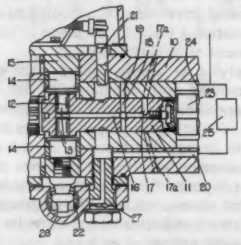
Robert T. J. Skinner, High Wycombe, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Jun. 11, 1980, Ser. No. 158,629

Claims priority, application United Kingdom, Jul. 6, 1979, 7923684

Int. Cl.³ F04B *49/00, 19/00, 29/00*

U.S. Cl. 417—221 **7 Claims**



1. A fuel injection pumping apparatus comprising a body part in which is mounted an injection pump including an angularly adjustable cam having cam lobes, and a plunger which is mounted in a rotary part and which is adapted to be moved inwardly by the action of the cam lobes as the part rotates, passage means for conveying fuel to and from a bore containing the plunger, a piston contained within a cylinder, means connecting the piston to said cam so that axial movement of the piston within the cylinder will impart angular movement to the cam, means biassing the piston towards one end of the cylinder to retard the timing of delivery of fuel from the bore, passage means for supplying liquid under pressure to said one end of the cylinder, a valve member which controls the flow of liquid both into and out of said one end of the cylinder and the flow of liquid from the other end of said cylinder, a first one way valve positioned in said last named passage means, said first one way valve acting to prevent the sudden flow of liquid through said passage means from said one end of the cylinder as the cam lobes impart inward movement to the plunger as well as movement to said piston, and a second one way valve through which liquid can flow into the other end of the cylinder, said second one way valve acting to prevent a sudden flow of liquid out of the other end of the cylinder as the cam lobes allow outward movement of the plunger as well as movement of the piston.

4,365,940

ROTARY PISTON PUMP OF AXIAL TYPE

Toshio Hosokawa, 6-1-303 Kanamachi 1-chome, Katsushika-ku, Tokyo, Japan (125)

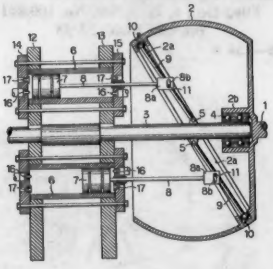
PCT No. PCT/JP79/00105, § 371 Date Feb. 14, 1980, § 102(e) Date Feb. 7, 1980, PCT Pub. No. WO80/00096, PCT Pub. Date Jan. 24, 1980

PCT Filed Apr. 24, 1979, Ser. No. 190,866

Claims priority, application Japan, Jun. 14, 1978, 53-70973; Jan. 17, 1979, 54-3067

Int. Cl.³ F04B *1/18*

U.S. Cl. 417—269 **10 Claims**



1. A rotary pump of the axial type comprising:

a frame;

a drive shaft rotatably mounted with respect to said frame;

a plurality of cylinders arranged parallel to and distributed symmetrically around an axis of said shaft, connected to said frame;

a piston slidably mounted in each cylinder for axial reciprocal motion therein, each piston having a piston rod extending substantially axially therefrom;

valve means connected to each cylinder for supplying fluid to and from each cylinder with motion of each respective piston therein;

a flywheel of rotary drum shape coaxially connected to said drive shaft having a coaxial surface with respect to said shaft axis and an oblique groove extending around said surface, said flywheel having an open end for receiving each piston rod, said coaxial surface being an inner arc shaped surface of said flywheel which carries said oblique groove; and

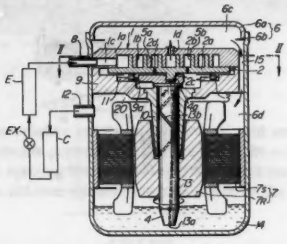
connecting means connecting each piston rod to said groove so that rotation of said shaft and flywheel axially moves each piston in its respective cylinder, said connecting means comprising a fixed shaft coaxial with said drive shaft, a hinge for each piston connected to said fixed shaft substantially at a center of a radius of curvature of said coaxial surface arc, a lever for each hinge having one end connected to said hinge for movement of a respective lever thereabout and an opposite end, a roller connected to each opposite end of each lever rotatably supported in said oblique groove, and a grip connected between each piston rod and an intermediate portion of a respective lever.

4,365,941

SCROLL COMPRESSOR PROVIDED WITH MEANS FOR PRESSING AN ORBITING SCROLL MEMBER AGAINST A STATIONARY SCROLL MEMBER AND SELF-COOLING MEANS

Kenji Tojo, Oaza Shimoinayoshi; Taisei Hosoda, Ohiramachi; Masato Ikegawa, and Masao Shiibayashi, both of Oaza Shimoinayoshi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 30, 1980, Ser. No. 145,574
Claims priority, application Japan, May 9, 1979, 54-55732
Int. Cl.³ F04B *35/04, 39/06, 39/12;* **F04C** *18/02*
U.S. Cl. 417—372 **11 Claims**



1. A scroll compressor for use in at least one of a refrigeration cycle and a media compression, the scroll compressor comprising:

a stationary scroll member including an end plate, an involute wrap extending at right angles to said end plate, and a discharge port opened at a starting end of said involute wrap;

an orbiting scroll member comprising an end plate, an involute wrap extending at right angles to said end plate of said orbiting scroll member and in mesh with said involute wrap of said stationary scroll member;

a suction port;

a rotation-preventing means for preventing a rotation of said orbiting scroll member;

a frame means jointed to said end plate of said stationary scroll member on a side in which is extended said involute wrap, said frame means defining a space in which said orbiting scroll member and a backpressure chamber is disposed;

a driving shaft extending through said frame means;

bearing means having at least a bearing mounted on said frame to support said driving shaft, said bearing means being disposed so as to be exposed to the backpressure chamber at one end thereof and to an exterior of said frame member at the other end thereof, said bearing means cooperating with said frame means and said driving shaft to seal the backpressure chamber from the exterior of the frame means;

a balancing weight means;

a power transmission means for transmitting a rotation of said driving shaft at a position offset from an axis of rotation thereof to said orbiting scroll member so as to cause an orbiting motion thereof;

a motor means drivingly coupled to said driving shaft;

a casing means for enclosing therein said stationary and orbiting scroll members, said frame means, said bearing means, said driving shaft, and said motor means in a gas-tight manner;

a compressed media discharged through said discharge port being circulated through an interior of said casing means before the media flows into a next stage; and

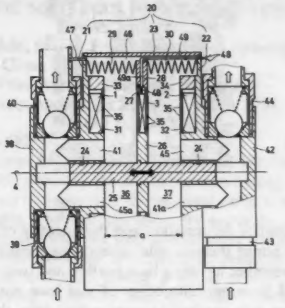
means for connecting said back pressure chamber with intermediate compression chambers defined between said stationary and orbiting scroll members.

4,365,942

LIQUID HELIUM PUMP

Curt Schmidt, Karlsruhe, Fed. Rep. of Germany, assignor to Kernforschungszentrum Karlsruhe GmbH, Karlsruhe, Fed. Rep. of Germany

Filed Dec. 15, 1980, Ser. No. 217,518
Claims priority, application Fed. Rep. of Germany, Jan. 29, 1980, 3003024
Int. Cl.³ F04B *45/00*
U.S. Cl. 417—412 **8 Claims**



1. In a pump for driving a liquid, including a pump housing defining a pumping chamber and having opposite first and second end walls bounding said pumping chamber; a piston arranged in the pumping chamber for alternating motion towards and away from the end walls; said piston having a piston axis extending parallel to the path of motion of said piston; inlet means and outlet means for providing a passage for the liquid into and out of the pumping chamber; and an electromagnetic drive means for reciprocating said piston, whereby liquid is drawn into and driven out of said pumping chamber through said inlet means and said outlet means, respectively, the improvement comprising

(a) first and second energizing coils mounted on the first and second end walls for generating a first and a second electromagnetic field in said pumping chamber; said energizing coils being at a predetermined distance from one another across said pumping chamber and further being coaxial with said piston axis;

(b) a control coil fixedly mounted on said piston for generating a third electromagnetic field in said pumping chamber; said control coil being coaxial with said piston axis; said energizing coils and said control coil forming part of said electromagnetic drive means for generating, in said pumping chamber, an electromagnetic force propelling said piston back and forth between said end walls; and

(c) a bellows affixed to peripheral regions of said piston and to said end walls; said bellows enclosing said pumping chamber.

4,365,943

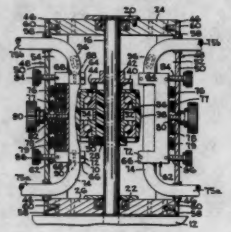
MULTICHANNEL PUMP

Emmett L. Durrum, Menlo Park, Calif., assignor to Eldex Laboratories, Inc., Menlo Park, Calif.

Continuation-in-part of Ser. No. 27,877, Apr. 6, 1979, abandoned. This application Dec. 22, 1980, Ser. No. 219,421
Int. Cl.³ F04B *23/04, 43/08*
U.S. Cl. 417—429 **14 Claims**

1. A pump for liquids comprising a tube, said tube being elastically deformable and defining a generally linear passage in an undeformed state, an inlet check valve disposed in said passage for affording liquid flow thereinto, an outlet check valve disposed in said passage and spaced therealong from said inlet valve to define a chamber between said check valves, means for periodically deforming said tube at said chamber to

effect outflow of liquid from said chamber through said outlet check valve, said deforming means retracting from said tube to permit restoration of said tube to an undeformed state and to effect inflow of liquid to said chamber through said inlet check valve, and means for adjustably positioning said tube toward and away from said deforming means so as to effect adjustment



of the amount of deformation and the quantity of liquid delivered in response thereto, said positioning means including a U-shaped member having a base portion and two side portions that extend from opposite edges of said base portion and are spaced from one another to receive said tube therebetween, said U-shaped member and said tube being removable.

4,365,944

PLANT WITH A TUNDISH FOR PRODUCING METAL POWDER

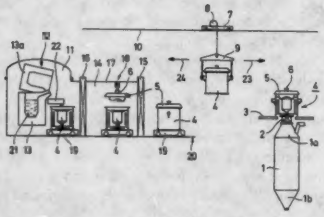
Heinz Pajonk; Franz Höhne, both of Bruchköbel, and Rolf Ruthardt, Hanau, all of Fed. Rep. of Germany, assignors to Leybold Heraeus GmbH, Cologne, Fed. Rep. of Germany

Filed Jun. 24, 1981, Ser. No. 276,772

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1980, 3024709; Jun. 30, 1980, 3024752

Int. Cl.³ B22D *23/08*

U.S. Cl. 425—7 **9 Claims**



1. In a plant for producing metal powder from metal melts, having a first chamber with means for converting a melt stream initially into liquid and then solid metal particles in a non-oxidizing atmosphere, a tundish with a closable floor opening and mountable on the first chamber for emptying thereinto and means for filling the tundish with metal melt, the improvement comprising: the tundish comprising a transporting vessel having a removable cover for maintaining a non-oxidizing atmosphere therein during transportation and discharge into the first chamber and means forming a second chamber spaced apart from the first chamber and enclosing the filling means for maintaining a non-oxidizing atmosphere, the means forming the second chamber comprising at least one lock into which the tundish can be brought and from which it can be removed and drive means for raising the cover for the filling procedure of the tundish.

4,365,945

VULCANIZING PRESSES FOR TIRES

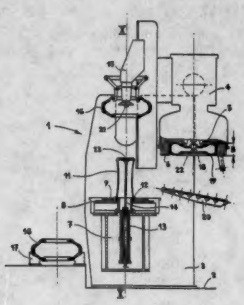
Bruno Salvadori, Cormano, Italy, assignor to Societa' Pneumatici Pirelli S.p.A., Milan, Italy

Filed Sep. 3, 1981, Ser. No. 299,214

Claims priority, application Italy, Oct. 31, 1980, 25682 A/80

Int. Cl.³ B29H *5/02, 5/06*

U.S. Cl. 425—43 **12 Claims**



1. A press for vulcanizing a vehicle tire comprising upper and lower platens, upper and lower mold sections associated with said upper and lower platens, respectively, means for moving the upper platen of the press vertically and then laterally relative to the lower platen, a radially expandable sack-shaped bladder having an upper closed and an opposite open end which is connected to said lower mold section between the lower mold section and a gripping surface said closed end being adopted to contact the said upper platen of the mold, a first fluid-dynamic control member comprising a first cylinder connected to the lower section of the mold, a piston slidably disposed in the cylinder and having a piston rod with the rod extending in a vertical position in the center at the inside and in contact with the closed end of the bladder, characterized by the fact of comprising actuating means for varying vertically the position of the first cylinder relative to the position of the open end of the bladder sealed and fixed between said lower mold section and said gripping surface.

4,365,946

APPARATUS FOR CONTINUOUSLY PROCESSING RUBBER, ELASTOMERS, PLASTICS AND LIKE MATERIALS WHICH CAN BE VULCANIZED OR CROSS-LINKED

Dietmar Anders, Hanover, Fed. Rep. of Germany, assignor to Hermann Berstorff Maschinenbau GmbH, Hannover Kleefeld, Fed. Rep. of Germany

Filed Jan. 27, 1981, Ser. No. 228,787

Claims priority, application Fed. Rep. of Germany, Feb. 1, 1980, 3003614

Int. Cl.³ B29F *3/08*

U.S. Cl. 425—144 **11 Claims**

1. Apparatus for continuously processing rubber, elastomers, plastics and the like materials which can be set by heat, comprising:

(a) an extruding cylinder and an extruding screw mounted for rotation therein,

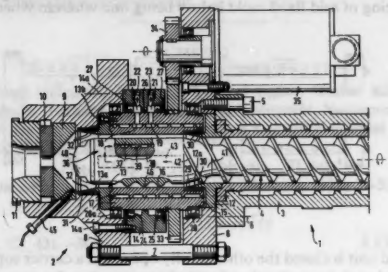
(b) means for driving said screw,

(c) an elongated mandrel disposed coaxially with said screw and secured to the downstream end of said screw for rotation therewith,

(d) jacket means surrounding a substantial portion of the length of said mandrel and spaced therefrom to provide an axially extending annular opening in which the material is vulcanised, and

(e) means for rotating said jacket means at an adjustable

speed in a direction opposite to the direction of rotation of said screw and mandrel,



whereby the relative rotary movement of said mandrel and said jacket means permits the temperature to be controlled in said annular opening between said jacket means and said mandrel so as to achieve optimum vulcanisation of the material.

4,365,947

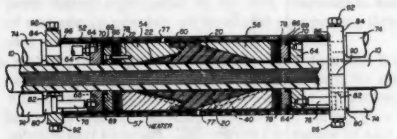
APPARATUS FOR MOLDING STRESS CONTROL CONES INSITU ON THE TERMINATIONS OF INSULATED HIGH VOLTAGE POWER CABLES

George Bahder; Carlos Katz, both of Edison; Attila F. Dima, Piscataway, and Adolf S. Knott, Roselle, all of N.J., assignors to GK Technologies, Incorporated, General Cable Company Division, Greenwich, Conn.

Filed Jul. 14, 1978, Ser. No. 924,873

Int. Cl.³ B29C *3/00, 27/22;* **H01B** *17/12;* **H02G** *7/04*

U.S. Cl. 425—384 **14 Claims**



1. Apparatus for molding, at its place of use on the termination of an insulated high voltage power cable, a tapered-surface stress control cone having a semi-conducting shield on one of its tapered surfaces, wherein the molding is made from a stress-control blank or preform provided on said cable, said preform approximating the shape of said resulting stress control cone, said apparatus comprising:

a split cylindrical enclosure having end flanges, and being of such length that it is adapted to surround said preform and at least portions of said cable that extend beyond opposite ends of the tapered surfaces of said perform,

means to heat said enclosure,

a pair of slidable split complementary molding members within said enclosure and being adapted to surround said portions of said insulated cable within said enclosure, said molding members having inner confronting tapered faces extending from the surface of said cable to the inner surface of said enclosure for molding said preform to its final shape upon the application of heat and pressure,

a pair of pressurizer end plates fitting within said cylindrical enclosure and spaced from one another along the length of the enclosure and beyond the outer faces of said mold members, said end plates having central openings through which said insulated cable passes and being adapted to transmit forces by sliding movement to said molding members during the molding of said stress control cone,

means to apply forces on said end plates for transmittal to said molding members, and

means to provide a fluid under pressure within said enclosure during the cooling of said molded stress control cone to prevent the formation of voids therein.

4,365,948

APPARATUS FOR THE CONTINUOUS MANUFACTURE OF FINNED TUBULAR SECTIONS MADE OF SYNTHETIC MATERIAL, AND FINNED TUBULAR SECTIONS

Jacques Chaplain, Sevres, France, assignor to Armosig S.A., La Celle Saint Cloud, France

Filed Apr. 16, 1979, Ser. No. 30,430

Claims priority, application France, Apr. 24, 1978, 78 12033

Int. Cl.³ B29D *23/18*

U.S. Cl. 425—417 **12 Claims**

1. An apparatus for continuous extrusion of tubular sections of thermoplastic material, the tubular section having a smooth inner surface and an annularly finned outer surface, said apparatus comprising a tubular extrusion die assembly having an axis formed by an outer die part and an inner die plunger in combination with two sets of chills each defining a casting cavity position, said chill having grooves of circular cross section alternating with ribs also of circular cross section thereby defining annular fins, conveyer means, for each said set of chills, for continuous displacement thereof along closed loop paths comprising a rectilinear forward branch extending parallel to the axis of said die assembly and on each side of an outlet opening of said die assembly, pairs of chills formed by one said chill from each said set of chills defining successive casting rings, a smoothing mandrel in line with said die plunger of said die assembly, said smoothing mandrel and said chills together defining said casting cavity for the desired tubular section, the improvement wherein the said chills and smoothing mandrel defining a minimum average tubular section wall thickness, and the radius of the circular cross section of said grooves of said chills being substantially smaller than the radius of the circular cross section of the ribs thereby reducing the weight of the resulting tubular section for a given level of mechanical property.

4,365,949

CO-EXTRUSION DIE APPARATUS FOR CO-EXTRUDING PLASTICS MATERIALS

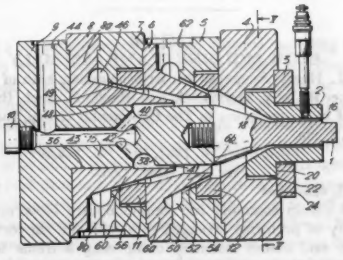
David D. Nash, Brownhills, England, assignor to Durapipe Limited, Cannock, England

Filed Apr. 4, 1980, Ser. No. 137,472

Claims priority, application United Kingdom, Apr. 6, 1979, 7912286

Int. Cl.³ B29D *23/04, 9/00;* **B29F** *3/04*

U.S. Cl. 425—463 **8 Claims**



1. An extrusion die for use in extruding hollow plastics products of the kind comprising a plurality of concentric layers of different composition and/or characteristics, the die comprising a central mandrel extending along a longitudinal axis of

the die and having a tip portion and an outer die structure encircling the mandrel, the die having an annular extrusion outlet and an annular-section extrusion passage extending to said annular extrusion outlet, said extrusion passage being defined between the mandrel and the outer die structure, said annular extrusion outlet of the die being defined by said outer die structure around said tip portion of the mandrel, the die having therein a first annular plenum chamber encircling the mandrel, a first portion of said extrusion passage extending from said first plenum chamber towards said extrusion outlet, the die further having therein a second annular plenum chamber, encircling the longitudinal axis of the die and disposed at a position which is further along said longitudinal axis from said extrusion outlet than said first annular plenum chamber, and an annular-section supply passage, also encircling said longitudinal axis of the die and extending from the second plenum chamber to meet said annular section extrusion passage in a junction therewith which is closer to said annular extrusion outlet than said first plenum chamber, an annular slot extending around the wall of the extrusion passage and providing the junction between the extrusion passage and said annular-section supply passage which extends from said second plenum chamber, the die including a duct extending through part of said mandrel to the first annular plenum chamber for the supply of plastics thereto, and a further duct extending to said second plenum chamber for the supply of plastics thereto, said outer die structure comprising a plurality of interengaged annular members each having a central axial opening through which the mandrel extends, a first said annular member having a portion, more remote from the extrusion outlet, which closely embraces the mandrel and a portion, nearer the extrusion outlet, which is spaced radially outwardly from the mandrel, to define, with the mandrel, said first annular plenum chamber and said first portion of said annular extrusion passage, said first annular member including a part extending from an axial position further from said annular extrusion outlet than said first plenum chamber, towards said extrusion outlet and which part tapers externally in the direction towards said extrusion outlet, an annular lip being formed at the end of said externally tapering part which is nearest the extrusion outlet, said annular lip encircling and being spaced from the mandrel, said tapering part of said first annular member defining the radially inner wall of the annular-section supply passage which extends from the second plenum chamber, a further portion of said die structure defining the opposing radially outer wall of said supply passage, said outer wall also decreasing in diameter in the direction towards the extrusion outlet, said further portion of said die structure including at least one further said annular member engaging said first annular member and defining therewith said second annular plenum chamber, the die further including a control ring incorporated in said outer die structure, the annular-section supply passage which extends from the second plenum chamber including an annular gap defined between said tapering portion of the first annular member and said control ring incorporated in said outer die structure, means being provided for adjustment of said control ring transversely of the longitudinal axis of the die.

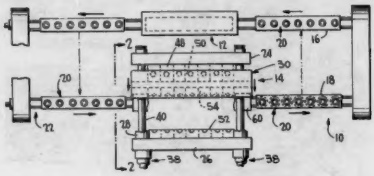
4,365,950

BLOW MOLDING CLAMP ASSEMBLY

Ieuan L. Harry; Suppayan M. Krihsnakumar, both of Nashua; Walter R. Jolly, Merrimack, and Martin H. Beck, Brookline, all of N.H., assignors to The Continental Group, Inc., Stamford, Conn.

Filed Mar. 16, 1981, Ser. No. 244,469
Int. Cl.³ B29C *17/07*
U.S. Cl. 425—534 **7 Claims**

1. A clamp assembly for simultaneously blow molding a plurality of preforms arranged in a row and supported by a carrier, said clamp assembly comprising a frame including transverse slide means, a clamp member mounted on said transverse slide means for back and forth transverse movement, a pair of plural cavity mold units, one of said mold units being positioned in said frame on each side of said clamp member, each of said mold units being longitudinally split and including two mold halves, one mold half of each mold unit being fixed relative to said frame and the other mold half of each mold unit being movable with said clamp member, the spacing of said fixed mold halves being one wherein when one



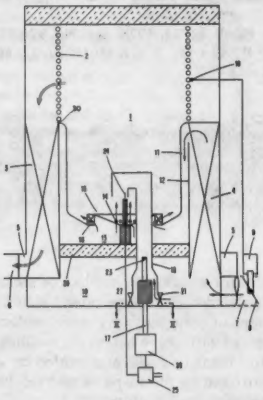
mold unit is closed the other is fully open, and a carrier support positioned on each side of said clamp member for transverse movement with said clamp member to position and support preforms with said mold units, and means for transversely reciprocating said clamp member to close one mold unit while opening the other mold unit.

4,365,951

DEVICE FOR COMBUSTION OF A VOLATILE FUEL WITH AIR

Jan Alpkvist, Spindelgatan 2, SE-58258 Linköping, Sweden

Filed Jun. 13, 1980, Ser. No. 159,448
Int. Cl.³ F23N *5/00*
U.S. Cl. 431—82 **4 Claims**



1. A device for combustion of a volatile fuel with air of the kind comprising a combustion chamber, means for preheating a substantial part of combustion air by exchanging heat with exhaust gases leaving the device, a tube for introducing fuel into said chamber and for introducing a small part of combustion air together with the fuel, said tube extending within and terminating in said chamber in a direction towards an air inlet for the preheated air supplied to said combustion chamber, characterized in that said tube is provided with means for providing substantially complete volatization and mixing of the fuel with said combustion air part in said tube, said volatization and mixing means including angularly displaced air inlet openings at the tube inlet limited by walls inclined relative to the radial directions so as to cause a combined rotary and axially directed air flow in said tube and means for forming a fuel film on the inside surface of said tube at a point distant from the tube termination, said film being moved toward the tube termination by said rotary and axial air flow in said tube

and volatizing and mixing with said air flow, and wherein said device further includes means for measuring the temperature of said volatized and mixed fuel and air exiting said tube and for controlling the amount of fuel admitted to said tube using said temperature measurement.

4,365,952

LIQUID GAS BURNER

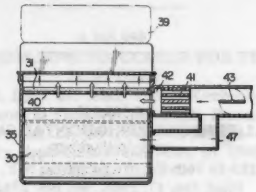
Yoshimi Ohmukai, Hirakata; Toshiro Ogino, Osaka; Kinichi Adachi, Takarazuka, and Hisanori Nishiguchi, Nayagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 18, 1980, Ser. No. 131,548

Claims priority, application Japan, Mar. 20, 1979, 54-32745; Apr. 17, 1979, 54-47611

Int. Cl.³ F23D *11/44*

U.S. Cl. 431—208 **4 Claims**



1. A liquid fuel burner comprising:
- a porous member including at least a fuel receiving section for receiving liquid fuel and a fuel evaporation section for evaporating liquid fuel transferred from said fuel receiving section;
- a fuel supplying device for supplying said liquid fuel to the fuel receiving section of said porous member;
- a hot air supply pipe having a multiplicity of air passage ports therein surrounded by the fuel evaporation section of said porous member, air from said pipe passing through said ports into said fuel evaporation section;
- an air-flow rate adjusting device located within said hot air supply pipe, said adjusting device controlling the rate at which air is supplied to said fuel evaporation section;
- a heater for heating air within said hot air supply pipe to a substantially constant temperature for supply to said fuel evaporation section, said constant temperature being independent of a change in the air flow rate and the temperature of the air before heating;
- a mixing chamber disposed downstream from the fuel evaporation section of said porous member, the hot air supplied to said fuel evaporation section and the gaseous fuel evaporated from said fuel evaporation section by said hot air being mixed without burning in said mixing chamber; and
- a burning space disposed downstream from said mixing chamber for burning the mixture evaporating from said mixing chamber, said heater maintaining said fuel evaporation section at a constant temperature after ignition of said fuel in said burning space irrespective of changes in the rate of evaporation of said fuel from said fuel evaporation section.

4,365,953

COOLER FOR COMBUSTIBLE MATERIAL

Jürgen Bostelmann, Rosengarten, Fed. Rep. of Germany, assignor to Claudius Peters AG, Fed. Rep. of Germany

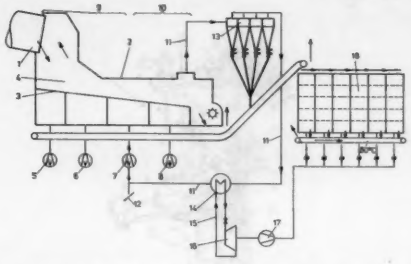
Filed Jul. 16, 1980, Ser. No. 169,276

Claims priority, application Fed. Rep. of Germany, Jul. 17, 1979, 2928752

Int. Cl.³ F27D *15/02*

U.S. Cl. 432—78 **6 Claims**

1. A cooler for combustible material, comprising:
- a cooling grate divided into sections;
- first cooling air circulating means connected with the grate sections to circulate cooling air therethrough to cool the material;
- means associated with a first section to feed completely the cooling air circulated through that section to a burner as air for combustion;
- second cooling air circulating means associated with a further section to circulate cooling air through the further section;



- said second cooling air circulating means including a blower;
- a turbine connected with the blower to drive the blower; and
- a steam generator associated with the further cooling section to utilize the waste heat of the cooling air circulated through the further cooling section, to generate the steam used to drive the turbine.

4,365,954

CONTINUOUS FURNACE FOR FIRING CERAMIC ARTICLES

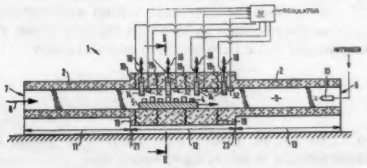
Fritz Petzi, Nuremberg, Fed. Rep. of Germany, assignor to Ludwig Riedhammer GmbH & Co. KG, Nuremberg, Fed. Rep. of Germany

Filed May 1, 1981, Ser. No. 259,693

Claims priority, application Fed. Rep. of Germany, May 2, 1980, 3016852

Int. Cl.³ F27B *5/04, 9/04, 7/00*

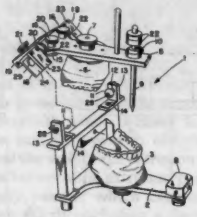
U.S. Cl. 432—198 **6 Claims**



3. In a continuous electric tunnel furnace including a tunnel through which articles to be fired are passed in a direction of feed; said tunnel having an inlet and an outlet at opposite longitudinal ends thereof and a roof and opposite side walls; said tunnel further including a length portion constituting a sintering zone; and means for generating a nitrogen stream in the zone of said outlet and for orienting the nitrogen stream against said direction of feed; the improvement comprising a gate projecting from said roof into said tunnel in said sintering zone in an orientation transverse to said direction of feed; said gate being slidable in a direction towards or away from said roof and having opposite lateral bounding edges being spaced from said side walls; further comprising setting means for adjusting the height position of said gate; said setting means including regulating means for adjusting the height position of

said gate as a function of the oxygen content of the furnace atmosphere in said sintering zone.

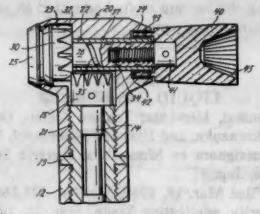
4,365,955
DENTAL ARTICULATOR
Michael Tradowsky, 10370 Blair La., Kirtland, Ohio 44094
Filed May 4, 1981, Ser. No. 260,406
Int. Cl.³ A61C *11/00*
U.S. Cl. 433—57 **7 Claims**



1. A dental articulator comprising mandibular and maxillary frames adapted to mount a dental patient's respective lower and upper dental casts, said frames having interengaged condylar elements on opposite sides thereof corresponding to the patient's temporomandibular joints for movement of said maxillary frame relative to said mandibular frame to positions corresponding to the check bites of lateral excursions of the patient's jaw; said condylar elements comprising horizontally spaced apart condylar spheres having axially outwardly extending coaxial horizontal stem portions fixed to said mandibular frame, and condylar guide elements angularly adjustably secured on opposite sides of said maxillary frame; said guide elements having axially and radially outwardly open radially extending grooves including parallel upper and lower walls slidably embracing the respective spheres to define, upon movement of said maxillary frame to the aforesaid positions, a pivot for the rotating sphere and a condylar path for the orbiting sphere, each groove having a bottom wall which, in centric position of said maxillary frame, is axially spaced from the associated sphere to establish a maximum bodily side shift of said maxillary frame when moved to the aforesaid positions; and an axially inwardly extending adjusting screw in threaded engagement with and extending through each stem portion and sphere; each screw having an axially outer end accessible for turning of said screw and having an axially inner end movable toward or away from the associated bottom wall responsive to turning of said screw thereby to adjust the bodily side shift to a predetermined value between zero and maximum.

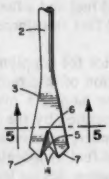
4,365,956
CLEANING CUP
Ronald L. Bailey, St. Peters, Mo., assignor to Young Dental Manufacturing Company, Hazelwood, Mo.
Filed Oct. 23, 1978, Ser. No. 953,474
Int. Cl.³ A61C *1/05, 3/06*
U.S. Cl. 433—115 **9 Claims**

1. In a dental device: a handpiece having a head; a shaft rotatably mounted in the head, the head being open at one end to expose the shaft for connection of a dental tool to the shaft; a circular recess in the open end of the head concentric with the shaft; a dental tool mounted on the head, connecting means between the tool and the shaft for rotation of the tool by the shaft; a flexible rubber-like skirt on the tool and unitary therewith, the skirt being separate from the connecting means and the skirt projecting from the end adjacent to the connecting means so that the connecting means transmits thrust forces from the tool to the shaft independently of the skirt, the skirt extending into the recess to engage the circular wall thereof sealingly by centrifugal force during rotation of the tool, said connecting means allowing the tool to be detached and attached to the shaft so that the skirt moves freely within the circular recess during attachment and detachment of the tool



to the shaft to be free from contact with the wall of the circular recess and with the shaft when the tool is static relative to the head.

4,365,957
DUAL PURPOSE PERIODONTAL SURGICAL INSTRUMENT
Asha Das, 113-16 76th Rd., Forest Hills, N.Y. 11375
Filed Jun. 17, 1981, Ser. No. 274,539
Int. Cl.³ A61C *3/02*
U.S. Cl. 433—144 **11 Claims**



1. A surgical instrument which comprises a handle, a shank and a cutting head, wherein said cutting head comprises at least three surgical cutting blades inclusive of:

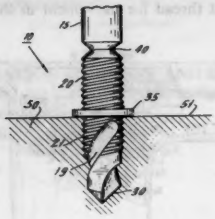
(a) two interior surgical cutting blades each possessing terminus points at one end of said blades and forming a V-shaped apex at the confluence of the end opposite of the ends of said terminus points; and

(b) at least one exterior surgical blade having a first end initiating at the terminus point of one of said interior blades and having a terminus point in a straight line with respect to said first end.

4,365,958
COMBINED DENTAL DRILL AND ANCHOR PIN
David G. Vlock, New York, N.Y.
Filed Jun. 17, 1981, Ser. No. 274,834
Int. Cl.³ A61C *5/08*
U.S. Cl. 433—225 **6 Claims**

1. A dental device combining a drilling end with an anchor pin for the purpose of performing in a single step drilling a pin hole in tooth dentin and retaining the anchor pin within the tooth structure; which comprises a drill, positioned at one end thereof, an integrally connected anchoring pin, stop means positioned on said anchoring pin, and a trailing shank at the other end for attaching said combined drill-anchoring pin device to a powered dental hand piece wherein said trailing

shank is provided with a shearing point adjacent to the protruding portion of the anchor pin, which is scored or grooved,



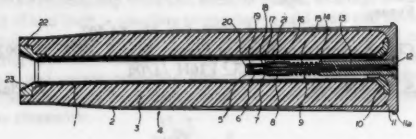
so as to eliminate damaging the tooth when the stop means is adjacent to the tooth.

4,365,959

TANK-GUN LOADING SIMULATOR FOR TRAINING PURPOSES

Robert Caurant, Igny, and Alain Leduc, Rambouillet, both of France, assignors to Thomson-CSF, Paris, France

Filed Jul. 31, 1981, Ser. No. 288,731
Claims priority, application France, Oct. 10, 1980, 80 21679
Int. Cl.³ F41F 27/00
U.S. Cl. 434—24 **5 Claims**



1. A tank-gun loading simulator for training purposes, wherein the said simulator comprises:

an ammunition, formed of a shell and a case connected together by a system which can be released by applying pressure to the case at the point where in a real shell the detonator would be placed;

a breech, recoil and return of which are guided by two roller slides, under pressure from a first hydraulic jack;

a breech wedge containing, instead of an actual hammer, an electromagnet release system, which applies thrust to the case;

a primary mechanism mounted on the breech, which raises the breech wedge by means of a first spring, transmitting to the breech-opening lever, through this first spring and a second spring, a force of resistance equal to the force applied by the gun-loader to open the breech, and operating a second mechanism where the breech is opened manually;

said second mechanism making the extractors pivot out of the breech through the effect of the first mechanism and during manual opening of the breech;

a cradle, comprising:

a breech jacket inside which the breech effects its recoil and return movements on roller slides,

two flanges supporting the jacket, and separated from each other by a strut on which the first jack presses,

bearings pivoting in elevation in these flanges,

a second jack pivoting in elevation, fixed to one of the flanges and to the base of the simulator;

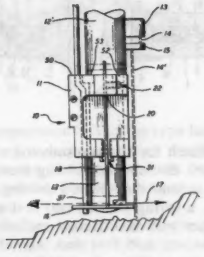
and a shell separator mounted on the cradle, which separates the shell and the case, and moves the shell to the position in which it is gripped by a chain conveyor, as soon as the breech wedge has re-ascended after loading of ammunition.

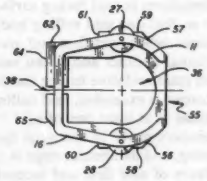
4,365,960

PROBE IMPACT SENSOR FOR A SIMULATOR

John T. Reed, New Milford, Pa., and John C. Stubbart, Boxborough, Mass., assignors to The Singer Company, Binghamton, N.Y.

Filed Dec. 19, 1979, Ser. No. 105,065
Int. Cl.³ G09B 9/08
U.S. Cl. 434—38 **5 Claims**





1. In a simulator having an optical probe for movement relative to a model board surface with which an obstruction is associated that can be contacted by said probe, an impact sensor comprising:

electrical switch means supported by said optical probe for movement therewith for actuation when said optical probe comes within a predetermined distance to said obstruction,

bumper means connected with said switch means to affect the actuation of said electrical switch means,

said bumper means being generally and substantially curved about said optical probe for engaging said obstruction when approached from substantially any direction, including sideways, and

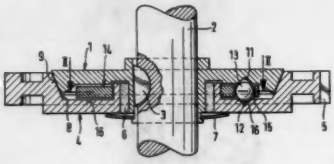
resilient connector means interconnecting said bumper means with said electrical switch means to actuate said switch means when said bumper means engages said obstruction,

whereby said electrical switch means is maintained in a non-actuation condition until said optical probe comes within said predetermined distance to said obstruction.

4,365,961
FRICTION CLUTCH INCLUDING ROLLING BODIES FOR TRANSMITTING A LIMITED TORQUE

Walter Weilenmann, Schaanwald, and Nikolaus Frick, Schaan, both of Liechtenstein, assignors to Hilti Aktiengesellschaft, Schaan, Liechtenstein

Filed Dec. 11, 1980, Ser. No. 215,405
Claims priority, application Fed. Rep. of Germany, Dec. 12, 1979, 2949990
Int. Cl.³ F16D 7/02
U.S. Cl. 464—36 6 Claims



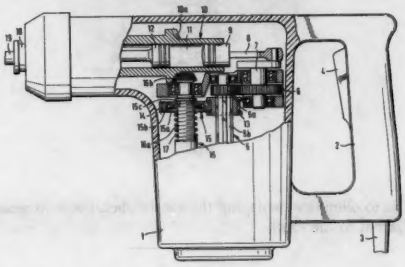
1. Friction clutch for the transmission of a limited torque comprising a first disc-shaped driving member having a friction surface, a second disc-shaped driving member having a friction surface, a spring biasing said first and second driving members together with said friction surfaces thereon disposed in frictional contact, said first and second driving members being coaxially rotatable, and said first and second driving members being disengageable from frictional contact when a predetermined driving torque is exceeded, each of said first and second disc-shaped driving members having a facing surface directed toward said facing surface on the other one of said first and second drive members, a plurality of rolling bodies positioned between said facing surfaces, each said facing surface having a plurality of indentations formed therein with each indentation arranged to receive one of said rolling bodies, said indentations in said facing surfaces disposed opposite one another so that one said rolling body engages in a pair of said indentations when said first and second driving members are in frictional contact and when said first and second driving members rotate relative to one another as the predetermined driving torque is exceeded, said rolling bodies move out of said indentations in at least one of said driving members as said driving members move in the axial direction against the force of said spring, and an annular cage is positioned between said facing surfaces of said first and second driving members with said rolling bodies mounted in said cage for maintaining said rolling bodies equiangularly spaced apart and in a desired radial spacing relative to the axes of said driving members.

4,365,962
SAFETY CLUTCH FOR POWER-OPERATED HAND-HELD TOOL

Wolfgang Regelsberger, Weissenburg, Fed. Rep. of Germany, assignor to Hilti Aktiengesellschaft, Schaan, Liechtenstein

Filed Nov. 3, 1980, Ser. No. 203,478
Claims priority, application Fed. Rep. of Germany, Nov. 2, 1979, 2944275
Int. Cl.³ F16D 9/00
U.S. Cl. 464—39 6 Claims

1. Motor-operated hand-held tool, such as a hammer drill, comprising a work spindle, a drive train including a drive motor and a drive spindle for transmitting driving force from said drive motor to said drive spindle, said drive train includes a shaft and a safety clutch positioned on said shaft for interrupting the transmission of driving force to said work spindle in the event a torque overload is developed, said shaft being threaded for at least an axially extending portion of the length thereof, a gear ring spaced outwardly from said shaft, said safety clutch arranged to releasably engage said gear ring and said shaft, said safety clutch comprises a hub mounted on said shaft within said gear ring and clutch members releasably interengaging said gear ring and hub, means for interengaging said hub with said thread on said shaft, and a spring acting on said hub for preventing said hub from being rotated relative to said shaft and screwed on said thread for movement in the axial direction

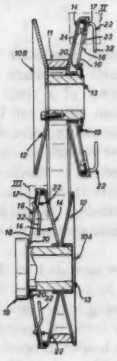


thereof until a torque overload is experienced causing said hub to rotate relative to said shaft and move axially along said thread thereon to a point where said clutch members release said gear ring and hub from engagement.

4,365,963
SPEED CHANGE PULLEY

Jacques J. M. Thirion de Briel, Levallois-Perret, France, assignor to Societe Anonyme Francaise du Ferodo, Paris, France

Filed Jul. 3, 1979, Ser. No. 54,407
Claims priority, application France, May 7, 1978, 78 20025
Int. Cl.³ F16H 11/06
U.S. Cl. 474—13 22 Claims



1. A speed change pulley of the type comprising two oppositely and coaxially disposed side plates each having a frustoconical portion, one of said side plates being a movable side plate and the other of said side plates being a fixed side plate, said movable side plate being biased by resilient return means and mounted for axial movement relative to the fixed side plate, said resilient return means comprising an annular diaphragm having a peripheral portion which forms a resilient washer of the Belleville washer type and which is in abutment against said movable side plate and a central portion which is divided into radially extending fingers and which is in abutment against a component axially fast with said fixed side plate, at least one weight member projecting from said diaphragm for increasing the sensitivity of said diaphragm to centrifugal speed, and engagement means provided on said diaphragm cooperable with complementary opening means provided on the movable side plate, said engagement means comprising at

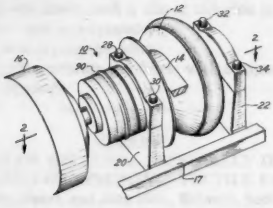
least one engagement member constituting a component formed separately from said diaphragm and fitted thereon, characterized by said one engagement member being integral with said one weight member.

4,365,964

COMBINATION COUPLING AND SHEAVE

Edward F. Krome, Jr., Columbus, Ind., assignor to Reliance Electric Company, Columbus, Ind.

Filed Oct. 29, 1980, Ser. No. 201,734
Int. Cl.³ F16H *11/04*
U.S. Cl. 474—28 **11 Claims**



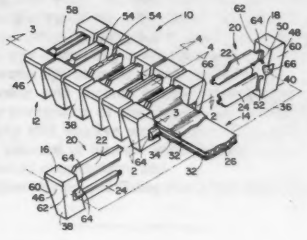
1. Combination coupling and sheave in a variable speed belt drive, comprising a variable pitch sheave having a shaft, an axially slidable flange mounted on said shaft and a fixed flange in axial relationship with said slidable flange, bearings at each end of said shaft, a coupling connected to said shaft and having a hub journaled in one of said bearings and having an end facing said fixed flange, a means for securing said hub to said shaft, and means extending generally parallel with said shaft for securing said fixed flange to said end of said hub for rotation therewith.

4,365,965

V-BLOCK BELT

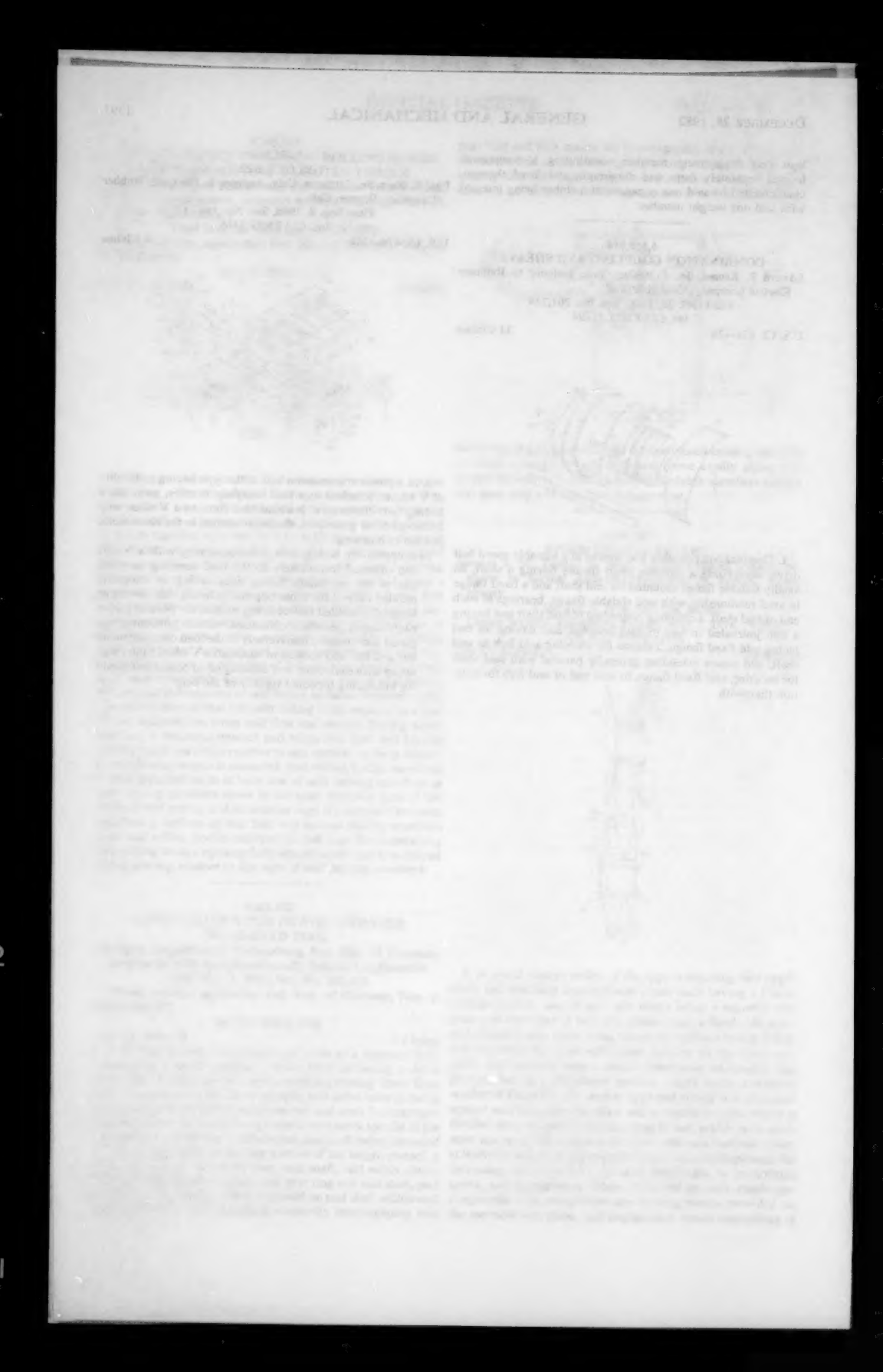
Paul E. Russ, Sr., Littleton, Colo., assignor to The Gates Rubber Company, Denver, Colo.

Filed Sep. 8, 1980, Ser. No. 184,712
Int. Cl.³ F16G *5/16*
U.S. Cl. 474—244 **4 Claims**



1. In a power transmission belt of the type having a plurality of V-blocks attached to a load carrying member, each block having two elastomeric portions that form two V-sides with frictional driving surfaces, the improvement in the elastomeric portion comprising:

two oppositely facing sides interconnecting with a V-side and oriented transversely to the load carrying member, one of the oppositely facing sides having an integrally molded rib and the other oppositely facing side having an integrally molded rib-receiving socket, the rib and socket each having generally cylindrical surface portions juxtaposed and oriented transversely to the load carrying member and ribs and sockets of successive V-blocks interdigitating with each other and defining pivot points and means for enhancing torsional rigidity of the belt.



4,365,966

PROCESS FOR MODIFYING CELLULOSIC FABRICS FOR IMPROVED HEAT TRANSFER PRINTING

Joseph S. Bruno, Chalmette, and Eugene J. Blanchard, New Orleans, both of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Sep. 15, 1981, Ser. No. 302,008
Int. Cl.[3] C09B *67/00*
U.S. Cl. 8—471 12 Claims

1. A process for modifying cotton-containing fabric by in situ polymerization to form a polyamide for improved heat transfer printing with disperse dyestuff, said process comprising:

(a) treating the fabric with an aqueous solution of a diamine;

(b) treating the fabric with a diacid chloride in an organic solvent to form a polyamide;

(c) rinsing and drying the fabric;

(d) heat transfer printing the fabric with a paper containing disperse dyestuff.

4,365,967

METHOD OF TREATING, ESPECIALLY DYEING, WHITENING OR FINISHING, TEXTILE FABRICS

Christian Guth, Basel, and Jörg Binz, Reinach, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 8, 1980, Ser. No. 214,306
Claims priority, application Switzerland, Dec. 14, 1979, 11095/79; May 21, 1980, 3961/80
Int. Cl.[3] D06P *1/613;* D06M *13/26, 13/18, 15/30*
U.S. Cl. 8—477 30 Claims

1. A method of treating a textile fabric with a foam, comprising the steps of preparing a foam with a blow ratio of (6 to 20):1 from a composition which contains

(a) 1 to 4 g./l. of an anionic or non-ionic surfactant, or a mixture thereof, as foam stabilizer,

(b) 0.1 to 1 g./l. of a polyether siloxane, having an antifoam action at elevated temperature and having a cloud point in the range of 20° to 70° C., as foam regulator.

(c) water, and

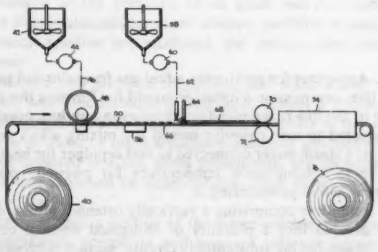
(d) dye, fluorescent whitening agent or finishing agent, applying said foam continuously in the form of at least one layer to the textile fabric and subjecting the fabric to a steam treatment.

4,365,968

METHOD OF TREATING TEXTILE MATERIALS

Razmic S. Gregorian, Aiken; Chettoor G. Namboodri, and John D. Johnson, both of North Augusta, all of S.C., assignors to United Merchants & Manufacturers, Inc., New York, N.Y.

Continuation of Ser. No. 943,829, Sep. 19, 1978, abandoned. This application Mar. 6, 1981, Ser. No. 241,335
Int. Cl.[3] B41M *1/10;* D06M *1/00, 13/34*
U.S. Cl. 8—477 17 Claims



14. A process for dyeing textile materials which comprises the steps of:

(a) preparing a foamed dye containing composition which includes a reactive material therein;

(b) applying said foamed dye containing composition to said textile material;

(c) collapsing said foamed dye containing composition;

(d) preparing a second foamed composition containing therein a material suitable to interact with said reactive material in said foamed dye containing composition;

(e) coating said textile material containing said foamed dye containing composition with said second foamed composition, said second composition being coated over said foamed dye containing composition prior to fixation of said foamed dye containing composition;

(f) collapsing said second foamed composition so as to achieve penetration of said dye into said textile material;

(g) allowing said reactive material in said foamed dye containing material to interact with the material in said second foamed composition; and

(h) thereafter drying and fixing the dye in said textile material.

4,365,969

METHOD FOR QUANTITATIVE ANALYSIS OF CHEMICAL COMPOSITION OF INORGANIC MATERIAL

Jury A. Karpov, ulitsa Svobody, 3, kv. 44, Moscow; Boris P. Burylev, ulitsa Moskovskaya, 2, korpus 1, kv. 117, Krasnodar; German G. Glavin, Profsojuznaya ulitsa, 33, kv. 155; Valeria E. Kvin, Lipetskaya ulitsa, 20, kv. 336, both of Moscow; Vasily V. Kovalev, Shemonaikhinsky raion, poselok Pervomaisky, ulitsa Metallurgov, 3, kv. 56, Vostochno-Kazakhstanskaya oblast; Konstantin J. Natanson, 3 Dorozhny proezd, 9, korpus 1, kv. 107, Moscow; Vladimir V. Orlov, I Koptelsky pereulok, 14, kv. 20, Moscow; Lev B. Kuznetsov, Rostovskaya naberezhnaya, 5, kv. 245, Moscow; Anatoly M. Zaitsev, Leninsky prospekt, 52, kv. 87, Moscow; Valentin E. Kartsev, ulitsa Ostrovityanova, 41, korpus 1, kv. 323, Moscow; Vladimir M. Morozov, Dobroslobodskaya ulitsa, 16, korpus 3, kv. 17, Moscow, and Gennady G. Kovalev, Tashkentskaya ulitsa, 16, korpus 1, kv. 21, Moscow, all of U.S.S.R.

Filed Jan. 5, 1981, Ser. No. 222,506
Int. Cl.[3] G01N *31/00*
U.S. Cl. 436—75 18 Claims

1. A method for the quantitative chemical analysis of an inorganic material selected from the group consisting of metals, alloys, metalloids, and compounds thereof, which comprises:

(a) charging a sample of said inorganic material into a molten bath of a metal and a non-volatile halide, wherein the non-volatile metal halide forms a liquid layer on the surface of the metal, and whose temperature at the beginning of thermal dissociation exceeds the melting point, said inorganic material and said non-volatile halide being of different composition;

(b) melting said inorganic material in the molten bath, thereby forming one or more volatile halides from the inorganic material;

(c) extracting said volatile halides into a gaseous phase and quantitatively determining the elemental chemical composition of said volatile halides.

4,365,970

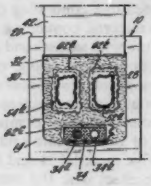
SPECIMEN TEST SLIDE AND METHOD FOR TESTING OCCULT BLOOD

Paul J. Lawrence, Campbell, and Charles W. Townsley, San Jose, both of Calif., assignors to SmithKline Instruments, Inc., Sunnyvale, Calif.

Filed May 1, 1981, Ser. No. 259,757
Int. Cl.[3] G01N *33/72*
U.S. Cl. 436—66 5 Claims

1. In an occult blood specimen test slide having a front panel, a rear panel, said front panel having one or more openings, sheet means carrying a test reagent between the front and rear

panels underlying each of said openings, a hinged cover adapted to overlie a portion of the front panel and said openings and flap means in the rear panel opposite said openings and pivotable to expose the underside of the sheet, the improvement comprising: an area positioned on a portion of the



sheet means facing the rear panel and isolated from the openings in the front panel, said area including a positive and negative monitor, said positive and negative monitors including the test reagent and said positive monitor additionally including a compound that reacts to environmental conditions in a manner similar to hemoglobin.

4,365,971

PRESSURE DISPENSABLE GELLED ALCOHOL FUEL

John A. Monick, Teaneck, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 937,385, Aug. 28, 1978, abandoned, which is a continuation of Ser. No. 596,346, Jul. 16, 1975, abandoned. This application Aug. 27, 1979, Ser. No. 70,074

The portion of the term of this patent subsequent to Apr. 14, 1998, has been disclaimed.

Int. Cl.³ C10L *7/04*

U.S. Cl. 44—7 C **4 Claims**

1. A shape-retaining mass of a fuel gel composition in a pressure-tight container equipped with valve means and comprising by weight about 60% to 90% of alcohol, with a major proportion being ethanol and the remainder being a C_3–C_4 alcohol; about 0.5 to 1.75% by weight of a hydrophilic, cross linked carboxy vinyl polymer neutralized with a weak amine base as the gelling agent; about 3.5% to 11% of water, and about 5% to 30% of a C_3–C_5 hydrocarbon propellant (a) or about 0.5 to 2% of a propellant (b) selected from the group consisting of nitrogen, carbon dioxide and air, or mixtures of (a) and (b), said propellant being effective to provide a pressure of 12 p.s.i.g. to about 100 p.s.i.g. in said container, said composition having a viscosity whereby it is dispensed from said container in gel form upon actuation of the valve means and upon contact with the surface of wood or charcoal sets up and forms a mass of gel including entrained propellant.

4,365,972

FUEL COMPOSITION

Rodney L. Sung, Fishkill; William M. Sweeney, and Benjamin J. Kaufman, both of Wappingers Falls, all of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Nov. 5, 1981, Ser. No. 318,533

Int. Cl.³ C10L *1/26*

U.S. Cl. 44—53 **23 Claims**

1. A fuel composition for internal combustion engines comprising

(a) a major portion of a fuel containing (i) at least one alcohol selected from the group consisting of ethanol and methanol and (ii) gasoline in amount of 0–5 volumes per volume of alcohol; and

(b) a minor wear-inhibiting amount of, as a wear-inhibiting additive, a quaternary ammonium reaction product of (i) an amide of an amino carboxylic acid and (ii) as a phosphorus ester, a di-hydrocarbyl phosphate.

4,365,973

MIDDLE DISTILLATE FUEL ADDITIVE

Glenn E. Irish, Fullerton, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Dec. 18, 1980, Ser. No. 217,915

Int. Cl.³ C10L *1/22*

U.S. Cl. 44—56 **24 Claims**

1. A middle distillate fuel oil having improved cold flow, cetane and anti-icing properties which comprises a mixture of a major amount of a middle distillate hydrocarbon stock and a minor amount of a cold flow additive, wherein said cold flow additive comprises:

(A) from 3 to 24 percent by volume of an ethylene-vinyl acetate copolymer, a vinyl acetate homopolymer, a vinyl acetate-acrylic ester copolymer, or a vinyl acetate-methacrylic ester copolymer, or a mixture thereof, wherein the alkyl group of the ester contains from 6 to 16 carbon atoms, said copolymers and homopolymers having molecular weights within the range of from 800 to 120,000,

(B) from 4 to 41 percent by volume of a paraffinic nitrate, or a mixture of paraffinic nitrates, wherein the paraffinic group contains from 4 to 16 carbon atoms,

(C) from 2 to 15 percent by volume of an aliphatic alcohol having from 1 to 6 carbon atoms, or a mixture thereof, and

(D) from 12 to 91 percent by volume of an aromatic solvent having a gravity within the range of from 25° to 32° API, and boils within the range of from 275° to 550° F.

4,365,974

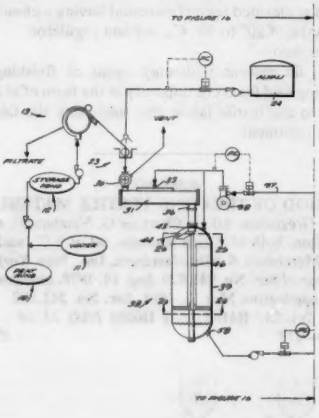
APPARATUS FOR SOLUBILIZING AND OXIDIZING OF PEAT

Carl L. Elmore; Erwin D. Funk, and Ted M. Poulin, all of Glen Falls, N.Y., assignors to Kamyr, Inc., Glen Falls, N.Y.

Filed Aug. 28, 1980, Ser. No. 182,314

Int. Cl.³ C10J *3/00*

U.S. Cl. 48—111 **2 Claims**



1. Apparatus for producing a fuel gas from slurried peat and the like, comprising: a cylinder mould for forming the slurried peat or the like to a desired consistency; a repulper operatively connected to said cylinder mould for mixing alkali with the slurry; a steam mixer connected to said repulper for heating the slurry to solubilization temperature for phenolic polymers therein, while pressurizing it;

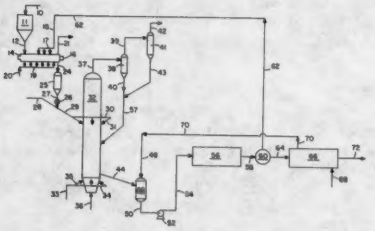
a solubilizer comprising a vertically oriented pressure vessel divided into a plurality of elongated vertical compartments having substantially circular sectors in cross-section with means for progressively feeding slurried peat or the like into each of the compartments, in turn, at the top thereof, and means for progressively effecting emptying

of each of the compartments at the bottom thereof after a predetermined retention time within the compartment so that as one compartment is being emptied another compartment is being filled, said solubilizer operatively connected to said for oxidizing the solubilized peat comprising means; means defining a liquid-transporting substantially vertical wave path having an inlet and an outlet, means for introducing oxygen at the bottoms of segments of the wave path, and means for exhausting off-gas from the tops of segments of the wave path so that the wave path is maintained above atmospheric pressure, said path wave inlet being connected to said solubilizer; means for circulating coolant, from an inlet around said wave path to an outlet, to remove exothermic heat while preventing mixing of the coolant and the solubilized peat or the like circulating in the wave path; means for cooling the oxidized solubilized peat to a temperature appropriate for fermentation, cooling said means connected to the wave path outlet; means for aerobically fermenting the cooled, oxidized, solubilized peat or the like to produce an off-gas including a fuel gas, said fermenting means operatively connected to said cooling means; and means for scrubbing the gas produced by said fermenting means to produce fuel gas, said scrubbing means operatively connected to said fermenting means.

4,365,975
USE OF ELECTROMAGNETIC RADIATION TO RECOVER ALKALI METAL CONSTITUENTS FROM COAL CONVERSION RESIDUES

Rollie B. Williams, and Ramachandra A. Nadkarni, both of Baytown, Tex., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jul. 6, 1981, Ser. No. 280,750
Int. Cl.³ C10J *3/54*
U.S. Cl. 48—197 R **12 Claims**



1. In a process for the conversion of a solid carbonaceous feed material in the presence of an alkali metal-containing catalyst into liquids and/or gases wherein particles containing alkali metal residues are produced, the improvement which comprises:

(a) treating said particles containing said alkali metal residues with electromagnetic radiation having a frequency between 0.10 MHz and about 10^5 MHz in the presence of water or other aqueous medium to produce particles depleted in alkali metal constituents and an aqueous solution enriched in water-soluble alkali metal constituents; and

(b) using at least a portion of the water-soluble alkali metal constituents present in said aqueous solution formed in step (a) in said conversion process as at least a portion of the alkali metal constituents comprising said alkali metal-containing catalyst.

4,365,976
PROCESS FOR SEPARATING DUST FROM DISTILLATION GASES

Heinz Frohnert, Bottrop, and Klaus Steude, Dorsten, both of Fed. Rep. of Germany, assignors to Veba Oel Development, Inc., Gelsenkirchen-Buer, Fed. Rep. of Germany

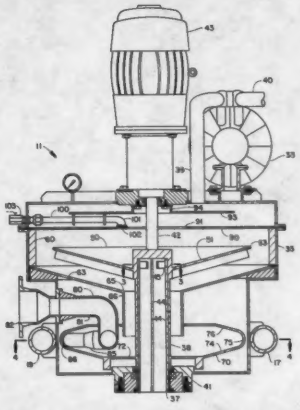
Filed Jun. 24, 1981, Ser. No. 277,028
Claims priority, application Fed. Rep. of Germany, Jun. 25, 1980, 3023727
Int. Cl.³ B03C *3/01*; C10G *35/10*
U.S. Cl. 55—4 **4 Claims**

1. A process for removing dust free of condensed higher hydrocarbon materials from distillation gases containing condensable higher hydrocarbon materials comprising subjecting said distillation gases to electrostatic precipitation at a temperature above the dew point of said condensable higher hydrocarbon materials.

4,365,977
DRILLING MUD DEGASSER

Gary L. Egbert, Houston, Tex., assignor to NL Industries, Inc., New York, N.Y.

Filed Feb. 3, 1981, Ser. No. 231,150
Int. Cl.³ B01D *19/00*
U.S. Cl. 55—41 **8 Claims**



1. A drilling mud degasser, which comprises:

a pressure vessel;

means for creating a substantial vacuum in said pressure vessel;

a rotor having a vertically oriented axis rotatably mounted in said pressure vessel, said rotor having a conical surface which extends radially outwardly from said axis and upwardly toward a rim;

means for depositing drilling mud on said surface of said rotor;

means for rotating said rotor about said axis to accelerate and force drilling mud deposited on said surface in a turbulent thin film upwardly and outwardly on said surface toward said rim;

an impingement ring mounted within said pressure vessel about and radially spaced apart from said rim for the impingement thereon of drilling mud from said rotor;

and means for collecting drilling mud impinged upon said impingement ring.

8. A method for degassing a drilling mud containing entrained gas, said method comprising:

(a) flowing a drilling mud containing entrained gas upwardly in a vertical, cylindrical inlet zone under conditions of centrifugal rotation and substantial vacuum for disengaging gas therefrom and for introducing said mud

into a conical degassing zone having a downwardly directed apex located within a degassing vessel maintained at a substantial vacuum;

(b) centrifugally rotating said mud in said conical degassing zone, forming a thin, turbulent film of said mud flowing radially upward and outward for disengaging gas therefrom and imparting radial momentum to said mud;

(c) impinging said radially flowing mud upon an impingement ring within said degassing vessel for desengaging gas therefrom and stopping said mud's radial flow;

(d) removing degassed mud from said degassing vessel; and

(e) removing disengaged gas from said degassing vessel.

4,365,978

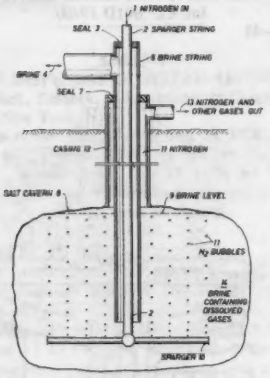
STORAGE OF LIQUID HYDROCARBONS IN SALT DOME CAVERNS

Paul R. Scott, Brazoria, Tex., assignor to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 133,755, Mar. 25, 1980, abandoned. This application May 7, 1981, Ser. No. 261,406

Int. Cl.³ B01D *19/00*; **E02D** *27/00*

U.S. Cl. 55—47 **9 Claims**



SCHEMATIC DEPICTING THE USE OF NITROGEN TO DECONTAMINATE BRINE IN A SALT CAVERN

1. A process for decontaminating water in an underground cavern, said water containing at least one contaminating gas from the group consisting of oxygen and carbon dioxide, comprising bubbling a decontaminating gas into the water to displace some of the water from the cavern, reducing the pressure of the decontaminating gas filling the volume left above the water, allowing the contaminating gas to pass from the water into the decontaminating gas and passing the decontaminating gas and contaminating gas out of the underground cavern.

4,365,979

WATER PRODUCING APPARATUS

Tetsu Takeyama; Kenkoku Azuma; Akira Ikeda; Toshie Yamamoto, and Shigeho Katsurada, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 2, 1980, Ser. No. 183,458

Claims priority, application Japan, Sep. 3, 1979, 54/113393

Int. Cl.³ B01D *53/06*

U.S. Cl. 55—181 **8 Claims**

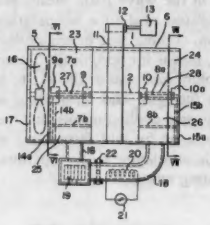
1. A water producing apparatus for extracting water from moisture-laden ambient air comprising:

a rotatable adsorbent column containing a plurality of circumferentially spaced chambers packed with an adsorbent for adsorbing moisture;

a first member adjacent one end of said adsorbent column, said first member including a first desorbent section of a first predetermined size and a first adsorbent section of a second predetermined size;

a second member adjacent an opposite end of said adsorbent column, said second member including a second desorbent section of a first predetermined size and a second adsorbent section of a second predetermined size;

a driving device for intermittently turning said adsorbent column relative to said first and second members wherein at least one of said circumferentially spaced chamber is in air-tight communication with both said first desorbent section and said second desorbent section and a remainder of said plurality of circumferentially spaced chambers is in flow through communication with said first adsorbent section and said second adsorbent section;



means for passing ambient air through said remainder of said plurality of circumferentially spaced chambers wherein moisture from the ambient air is adsorbed on said adsorbent;

means for removing the moisture from the adsorbent in said at least one circumferentially spaced chamber in communication with said first and second desorbent sections; and

means for varying the number of chambers in communication with said first and second desorbent sections which further comprises a first, second, third and fourth closing plate which are positioned substantially transverse to the longitudinal axis of said adsorbent column and are disposed within said first and second member, respectively, and wherein said first and second closing plates are slidable so as to contact one another and said third and fourth closing plates are slidable so as to contact one another.

4,365,980

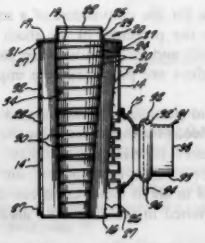
AIR FILTER ASSEMBLY

Robert M. Culbert, Manhattan Beach, and Charles E. Miller, San Marino, both of Calif., assignors to Farr Company, El Segundo, Calif.

Filed Aug. 20, 1981, Ser. No. 294,806

Int. Cl.³ B01D *50/00, 46/52*

U.S. Cl. 55—315 **7 Claims**



1. A filter assembly particularly adapted for use as an air intake filter on large trucks comprising a cylindrical walled housing having a closed end, an open end and at least one air inlet aperture in the sidewall thereof, said open end defining a

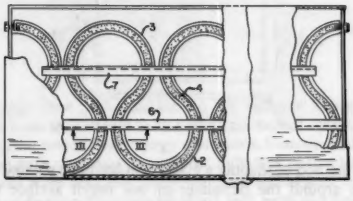
first annular sealing surface disposed about a central air outlet aperture; a hollow offset frustoconically-shaped filter element formed of a pleated filter medium disposed within said housing with one end thereof being in sealing engagement with said closed end of said housing, the other end in sealing engagement with said first sealing surface about said air outlet aperture and the portion of said filter element facing said air inlet aperture in said housing tapering inwardly from said first annular sealing surface on said open end of said housing to said closed end; and a removable air inlet bonnet adapted to be releasably secured to said housing externally adjacent said air inlet aperture in the sidewall thereof, said bonnet defining a hollow substantially frustoconically body portion, one end of said body portion defining a second annular sealing surface and the other end thereof terminating in a tubular air intake extension and means for releasably securing said second sealing surface against said housing and about said air inlet aperture therein.

4,365,981

GAS FILTER

John B. McDonough, Allison Park, Pa., assignor to Mine Safety Appliances Company, Pittsburgh, Pa.

Filed Jul. 1, 1981, Ser. No. 279,589
Int. Cl.³ B01D *53/14, 46/30*
U.S. Cl. 55—497 **3 Claims**



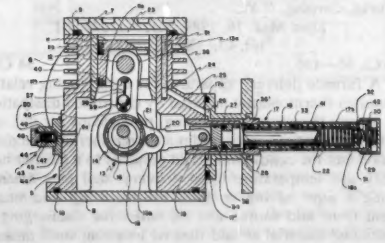
1. A gas filter comprising two uniformly spaced nesting screens extending within a frame structure along a serpentine path, each of the screens having laterally spaced areas curved in one direction lengthwise of said path and alternating with laterally spaced areas curved in the opposite direction and integrally joined thereto to thereby provide each of the screens with a continuous curvature without any flat surfaces from end to end of said serpentine path and the lateral ends of the screens being secured to the frame structure, and granular filtering material filling the space between the screens to form a serpentine filter bed of continuous curvature.

4,365,982

CRYOGENIC REFRIGERATOR

Peter Durenec, Annandale, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 30, 1981, Ser. No. 335,925
Int. Cl.³ F25B *9/00*
U.S. Cl. 62—6 **5 Claims**



1. An improved cryogenic refrigerator including a housing, an electric motor mounted on said housing and having a rotor and a rotor shaft, a drive shaft in said housing, means for transmitting torque from said rotor shaft to said drive shaft, whereby said drive shaft has an eccentric cam thereon, and whereby a master piston rod is journaled on said cam and has first and second orthogonal arms, a compression cylinder in and a cooling head on said housing, said cooling head having a cylinder therein and having a flange end mounted to said housing and a cold finger end directed away from said housing, a compression piston in said compression cylinder and having a piston pin thereon journaled to said first arm, a regenerator-displacer piston in said cooling head cylinder and having a piston pin, a connecting rod with a pin on one end journaled to said second arm of said master rod and journaled on the other end to the pin of said regenerator-displacer piston, whereby said cooling head includes a cold cap at said cold finger end and an expansion chamber defined by an end of said regenerator-displacer piston and by said cold cap, whereby said regenerator-displacer piston is hollow and is filled with porous heat-exchange material, a cryogen passageway between said compression cylinder and the cylinder of said cold finger, whereby said compression cylinder, said passageway, and the cylinder of said cold finger and the porous spaces of said heat-exchange material are filled with a cryogen, whereby said drive shaft rotates said rotor shaft rotates and, through said master piston rod, causes said pistons to reciprocate in their cylinders, the improvement comprising:

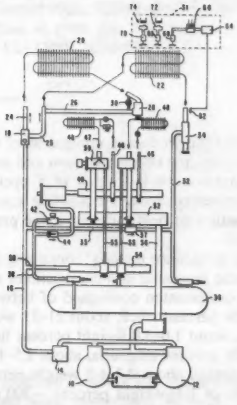
a rotor shaft on said motor which is in the form of a torsion bar extending through said rotor and affixed thereto at the end of said rotor away from said housing.

4,365,983

ENERGY SAVING REFRIGERATION SYSTEM

Fayez Abraham, and Edward Bowman, both of Niles, Mich., assignors to Tyler Refrigeration Corporation, Niles, Mich.

Division of Ser. No. 57,350, Jul. 13, 1979, Pat. No. 4,286,437.
This application Mar. 4, 1981, Ser. No. 240,465
Int. Cl.³ F25B *41/00*
U.S. Cl. 62—81 **6 Claims**



1. A method of operating a refrigeration system having compressor means, condenser means, receiver means, evaporator means and suction means, the method including the steps of:

compressing gaseous refrigerant having a relatively high compressor discharge temperature and relatively high compressor discharge pressure;

condensing the compressed gaseous refrigerant to a liquid by cooling the refrigerant ideally to a pre-selected liquid temperature level of higher than approximately 45° F.

when the refrigerant passes through the condenser means so that the liquid leaving the condenser means is subcooled and sensing the temperature of the liquid leaving the condenser means and controlling the operation of cooling the refrigerant in dependence upon the temperature of the liquid;

maintaining the pressure in the condenser means at a level where the gaseous refrigerant will condense to a liquid at a temperature above the pre-selected cooling temperature level for the liquid leaving the condenser means;

evaporating the liquid refrigerant at a substantially lower pressure than the compressor discharge pressure;

returning the evaporated refrigerant to the compressor;

defrosting the evaporator means by conducting gaseous refrigerant from the compressor means to the evaporator means during a first time period; and

terminating the flow of gaseous refrigerant to the evaporator means at the end of the first time period and delaying reinitiation of the flow of liquid refrigerant to the evaporator means during a second time period so as to allow for condensation from around the evaporator means to drain.

4,365,984

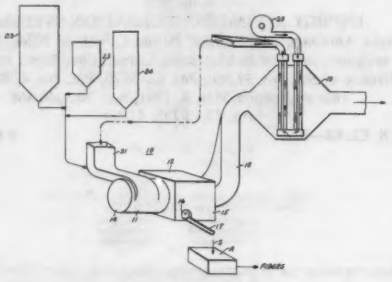
MINERAL WOOL AND PROCESS FOR PRODUCING SAME

Kenneth H. Gee, Bethlehem, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Continuation-in-part of Ser. No. 228,420, Jan. 23, 1981, abandoned. This application Mar. 26, 1982, Ser. No. 362,210

Int. Cl.³ C03B *37/01*

U.S. Cl. 65—2 **10 Claims**



1. A process for producing mineral wool wherein a molten slag substantially free of metallic iron and suitable for fiberizing into mineral wool is formed in a cyclone-type furnace having a combustion zone, a collecting zone and an exhaust gases-combustion air heat exchanger, the process comprising:

(a) feeding

(i) a first particulate material containing organic combustibles and inorganic non-combustibles and characterized by a composition comprised of between: about 49–62 weight percent silica, about 21–27 weight percent alumina, about 1.0–3.0 weight percent lime, about 0.5–3.0 weight percent magnesia, about 2.5–19 weight percent iron oxides, about 0.3–4.0 weight percent sulfur, a size consist of 100 weight percent −200 mesh and at least about 70 weight percent −325 mesh, and a heating value of about 10 mega J per kilogram of molten slag produced, and

(ii) a second particulate material containing fluxstone and characterized by a size consist of 100 weight percent −200 mesh and at least about 30 weight percent −325 mesh, and

(iii) preheated air into the combustion zone of the cyclone-like furnace,

(b) substantially instantaneously burning the organic combustibles and melting and reacting the inorganic non-combustibles and fluxstone to form a molten slag on the walls of the collecting zone,

(c) collecting the molten slag in the bottom of the collecting zone,

(d) passing waste combustion gases formed in the furnace through a heat exchanger to thereby heat incoming combustion air used in the process,

(e) discharging the molten slag from the collecting zone, and

(f) fiberizing the molten slag to form mineral wool.

4,365,985

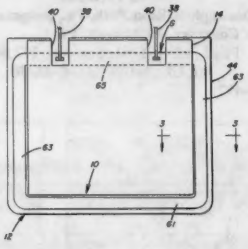
METHOD OF PRESS BENDING A PAINTED GLASS SHEET

John C. Slabach, Jr., Crestline, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Apr. 1, 1981, Ser. No. 250,961

Int. Cl.³ C03B *23/03*

U.S. Cl. 65—106 **5 Claims**



1. A method of shaping a glass sheet having a painted border portion around the perimeter of one major surface thereof including a pair of painted side edge portions and a painted bottom edge portion comprising the steps of:

(a) heating said glass sheet to an elevated temperature sufficient for shaping,

(b) supporting the heated glass sheet along its top edge by tongs between a pair of press bending molds having shaping surfaces of substantially complemental shape and different outline sizes,

(c) engaging said press bending molds against the opposite major surfaces of said heated glass sheet to change the shape of said sheet,

characterized by engaging said painted major surface having a painted border portion with said mold of smaller outline size and the opposite major surface with said mold of larger outline size, whereby, when said molds are engaged, none of the painted border portion along said side edge portions and said bottom edge portion of said painted major surface comes into contact with either press bending mold.

4,365,986

FURNACE DELIVERY SYSTEM

Ashok L. Nayak, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Mar. 16, 1981, Ser. No. 244,001

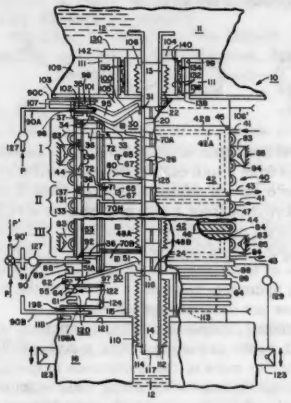
Int. Cl.³ C03B *5/033*

U.S. Cl. 65—136 **54 Claims**

1. A furnace delivery apparatus for conditioning relatively hot molten thermoplastic material by controlled dissipation of heat energy therefrom comprising: pipe means for delivering said thermoplastic material from a source thereof to a desired location and for conditioning said material to a desired homogeneity and temperature upon delivery, said pipe means including a pipe having an inlet for receiving said material therein from said source and an outlet for discharging said conditioned material at said desired location; shell means located about said pipe means and defining a closed chamber which surrounds said pipe and extends between said pipe and

said shell means, said shell means having fluid passageways extending therethrough for the circulation of a heat exchange fluid therein; and at least one radially spaced apart radiation heat shield means located within said closed chamber and surrounding said pipe for reflecting back to said pipe heat radiated therefrom for controlling heat loss from the pipe.

38. A method of conditioning relatively hot molten thermoplastic material comprising the steps of: confining the material



to a selected flow path, conducting the material along said flow path from an inlet end to an outlet end thereof, selectively regulating the rate of heat energy dissipation from the material along said path including the step of radiation heat shielding the material from heat loss along said path and at least one of the steps of heating the material along said path and heat exchanging and removing heat energy given up by said material along said path.

4,365,987

APPARATUS AND METHOD OF CONDITIONING AND CONVEYING THERMOPLASTIC MATERIAL

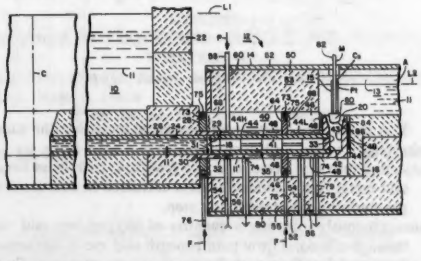
George B. Boettner, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Nov. 4, 1981, Ser. No. 317,993

The portion of the term of this patent subsequent to Oct. 5, 1999, has been disclaimed.

Int. Cl.[3] **C03B** *5/23*

U.S. Cl. 65—137 **35 Claims**



1. Apparatus for conducting relatively hot molten thermoplastic material from a furnace and delivering the thermoplastic material to a remote location with a desired homogeneity comprising: conduit means having an inlet end adapted to receive the thermoplastic material from the furnace and an outlet end for delivering said thermoplastic material from the furnace to the remote location; flow control means in communication with said conduit means for regulating the flow of the thermoplastic material from the furnace; a refractory structure located about said conduit means defines a chamber which surrounds the same and extends between said inlet and outlet ends of the conduit means, said chamber being in flow communication with at least one of the furnace and the remote location, said chamber being filled with a supply of thermoplastic material immersing the conduit means therein; and means located in the chamber intermediate the respective inlet and outlet ends of the conduit means for blocking flow communication of the thermoplastic material exterior of the conduit means through said chamber between the furnace and the remote location.

28. A method of conveying a supply of molten thermoplastic material from a source at one temperature and pressure to a remote location at another temperature and pressure, said thermoplastic material existing at virtually any fluid condition comprising the steps of: confining the material to a selected flow path; conducting the material along the flow path from an inlet end at the source to an outlet end thereof at the remote location; surrounding the flow path with a concentric annular chamber exterior thereof, said chamber having wall portions in spaced relation with said flow path, said wall portions defining a space within said chamber; communicating a portion of the molten thermoplastic material from the supply of the same to the exterior of the flow path into the space; surrounding the flow path with the thermoplastic material communicated thereto for immersing the flow path in said material within said space; and blocking flow communication of said thermoplastic material located exterior of the flow path from the inlet end to the outlet end thereof which flow communication would occur due to the difference in pressure between the supply and the remote location.

4,365,988

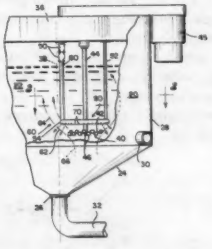
FLUID-MIXING APPARATUS AND METHOD

J. Clifford Graham, Lafayette; Shelby W. Gallien, West Lafayette, both of Ind., and Maurice P. Gill, Watseka, Ill., assignors to 3G Corporation, West Lafayette, Ind.

Filed Dec. 8, 1980, Ser. No. 214,013

Int. Cl.[3] **C05B** *7/00*; **B01F** *7/26*

U.S. Cl. 71—34 **24 Claims**



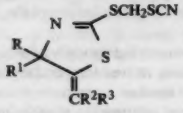
1. A method of uniformly mixing and dispersing a volatile first liquid in a second liquid, comprising the steps of providing a body of the second liquid in a container, creating in the body of second liquid a recirculating flow pattern including a zone of rapid directional liquid flow, injecting into the rapid liquid flow zone a plurality of fine streams of the volatile first liquid to be mixed with the second liquid so as to produce an intimate dispersion of finely divided volatile first liquid at spaced points in the second liquid, and carrying the resulting dispersion into the recirculating flow pattern to widely mix the dispersed volatile first liquid throughout the second liquid in the container.

4,365,989
2-THIOCYANOMETHYLTHIO-4,4-DIALKYL-5-SUBSTITUTED-THIAZOLINE FUNGICIDES

Edward I. Aoyagi, Petaluma, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jan. 27, 1982, Ser. No. 343,089
Int. Cl.³ C07D *277/08*; A61K *31/245*; A01N *43/02*
U.S. Cl. 71—67 **15 Claims**

1. A compound of the formula



wherein R and R^1 are independently lower alkyl or R and R^1 are joined to form a cycloalkyl group of 5 to 8 carbon atoms; R^2 is hydrogen or chloro; and R^3 is hydrogen, halogen or $-SR^4$ wherein R^4 is lower alkyl, phenyl or phenyl substituted with 1 to 3 of the same or different substituents selected from halogen, nitro, lower alkyl or lower alkyl substituted with 1 to 3 halogens with the proviso that when R^2 is chloro, R^3 is not $-SR^4$, bromine, fluorine or iodine.

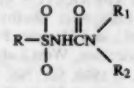
4,365,990
SULFONYLUREA HERBICIDAL ANTIDOTES

Edmund J. Gaughan, Berkeley, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 77,881, Sep. 21, 1979, Pat. No. 4,260,824. This application Jun. 27, 1980, Ser. No. 163,755
Int. Cl.³ A01N *25/32*
U.S. Cl. 71—100 **17 Claims**

1. A herbicidal composition comprised of

(a) an antidotally effective amount of a sulfonylurea of the formula



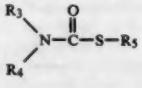
in which

R is selected from the group consisting of 1–4 carbon alkyl, phenyl, and methyl substituted phenyl;

R_1 is selected from the group consisting of hydrogen and 1–4 carbon alkyl; and

R_2 is selected from the group consisting of mono- and polyhalosubstituted phenyl, 3–6 carbon alkynyl, and 2–6 carbon alkoxyalkyl; and

(b) an herbicidally effective amount of a thiocarbamate of the formula



in which

R_3 is selected from the group consisting of 1–6 carbon alkyl and 2–6 carbon alkenyl;

R_4 is selected from the group consisting of 1–6 carbon alkyl, 2–6 carbon alkenyl, cyclohexyl and phenyl; or

R_3 and R_4 together form a hexamethylene group; and

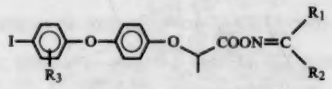
R_5 is selected from the group consisting of 1–6 carbon alkyl, 1–6 carbon haloalkyl, 5–10 carbon alkylene ring, phenyl, substituted phenyl, wherein the substituents are 1–4 carbon alkyl, 1–4 carbon haloalkyl, and halo, benzyl and substituted benzyl, wherein the substituents are 1–4 carbon alkyl, 1–4 carbon haloalkyl, and halo.

4,365,991
PROPIONIC ACID OXIMES

Wijitha de Silva, Schönflisdorf, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Mar. 6, 1981, Ser. No. 241,189
Claims priority, application Switzerland, Mar. 10, 1980, 1861/80; Jan. 8, 1981, 88/81
Int. Cl.³ A01N *39/02*; C07C *131/00*
U.S. Cl. 71—121 **17 Claims**

1. A compound of the formula



wherein R_1 is hydrogen, alkyl of from 1 to 6 carbon atoms or cycloalkyl of from 3 to 6 carbon atoms, R_2 is hydrogen, alkyl of from 1 to 6 carbon atoms, alkenyl of from 2 to 6 carbon atoms or alkynyl of from 2 to 6 carbon atoms, or R_1 and R_2 together with the carbon atom to which they are attached form a cyclopentane or cyclohexane ring which is unsubstituted or is mono-, di- or trisubstituted with alkyl of from 1 to 3 carbon atoms, R_3 is hydrogen, halogen or nitro with the proviso that R_1 and R_2 are not simultaneously hydrogen.

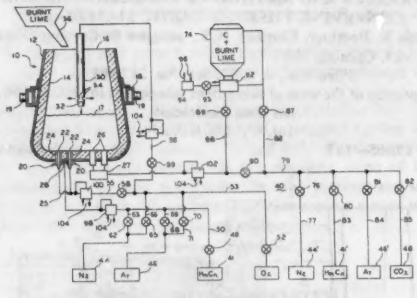
8. A herbicidal composition which comprises inert carrier material and, as the active ingredient, a herbicidally effective amount of one or more of the compounds of claim 1.

13. A method for combating weeds which comprises applying, to the locus to be protected, a herbicidally effective amount of the composition of claim 8.

4,365,992
METHOD OF TREATING FERROUS METAL

Walter Sieckman, Pittsburgh, Pa., assignor to Pennsylvania Engineering Corporation, Milwaukee, Wis.

Filed Aug. 20, 1981, Ser. No. 294,446
Int. Cl.³ C21C *5/48*
U.S. Cl. 75—60 **13 Claims**



1. A method of treating ferrous metal including the steps of charging a vessel with ferrous metal in a solid form,

injecting into said vessel and in a first flow path from beneath said metal finely divided carbon entrained in a nonoxidizing gas during a first preheating step,

simultaneously injecting a quantity of oxygen into said vessel through a second flow path beneath said metal and separate from said first flow path for oxidizing the carbon to fluidize the metal within said vessel during said preheating step,

injecting a hydrocarbon shielding fluid in surrounding relation to said oxygen,

discontinuing the flow of carbon through said first flow path after said metal is at least partially fluidized but continuing to inject the nonoxidizing gas for stirring said molten metal during a refining step,

continuing to inject oxygen and the surrounding hydrocarbon shielding fluid through said second flow path and into said fluidized metal during said refining step for oxidizing carbon in said molten metal.

4,365,993

RECOVERY OF COATED ALUMINIUM SCRAP

Francis M. P. Meredith, deceased, late of Banbury, England, and by Priscilla J. Meredith, administratrix, 52 Beargarden Rd., Banbury, Oxfordshire, England

Filed Jan. 21, 1981, Ser. No. 226,698

Claims priority, application United Kingdom, Jan. 23, 1980, 8002242

Int. Cl.³ C22B *21/06*

U.S. Cl. 75—68 R **4 Claims**

1. In a process for the removal of an organic coating from aluminium alloy scrap by burning-off said coating, the improvement which comprises depositing on the surface of the scrap an aqueous solution of a fluxing salt before burning-off the said coating, said fluxing salt solution containing at least 4% of said fluxing salt, said fluxing salt comprising a mixture of metal halide salts which fuse at a temperature below 710° C. and are soluble in water in an amount of at least 4%.

4,365,994

COMPLEX BORIDE PARTICLE CONTAINING ALLOYS

Ranjan Ray, Randolph, N.J., assignor to Allied Corporation, Morristown, N.J.

Filed Mar. 23, 1979, Ser. No. 23,379

Int. Cl.³ C22C *38/08, 38/10;* C21D *6/00*

U.S. Cl. 75—123 B **36 Claims**

1. Boron-containing transition metal alloys, based on one or more of iron, cobalt and nickel, containing at least two metal components, said alloys being composed of ultrafine grains of a primary solid solution phase randomly interspersed with particles of complex borides, wherein said complex boride particles are predominantly located at the junctions of at least three grains of said ultrafine grain solid solution phase.

4,365,995

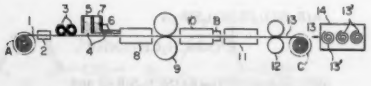
METHOD OF PRODUCING MULTI-LAYER SLIDING MATERIAL

Sanae Mori, Nagoya, Japan, assignor to Daido Metal Company Ltd., Nagoya, Japan

Filed Jul. 14, 1980, Ser. No. 168,980

Int. Cl.³ B22F *3/00*

U.S. Cl. 419—6 **8 Claims**



1. A method of producing multi-layer sliding material comprising the steps of:

cleaning and/or polishing the surfaces of a steel strip or a steel strip plated with nickel;

depositing on the surface of said steel strip treated in the first step powder of a first layer consisting of aluminum alone or containing aluminum as its main ingredient and at least one additive selected from the group consisting of aluminum strengthening elements, solid lubricants and low melting point metal lubricants, and distributing on said powder of said first layer powder of a second layer containing aluminum as its main ingredient and at least one additive selected from said group of lubricant additives;

when said steel strip having said powder of said first layer and said powder of said second layer deposited thereon is at a temperature greater than room temperature, cooling to a temperature range of room temperature to 15 C. degrees below room temperature, but not so low that moisture will condense in the form of dew on the powder covered strip;

passing said steel strip having said powder of said first layer and said powder of said second layer deposited thereon through a gap of rolling mill to effect cold rolling to provide a bond between said powder of said first layer and said powder of said second layer and between the powder and said steel strip so as to bring the density of the powder to a level above 90% of the theoretical density after pressure bonding is effected; and

sintering the rolled composite material at a temperature in the range between 280° and 520° C.

4,365,996

METHOD OF PRODUCING A MEMORY ALLOY

Keith Melton, Busslingen; Olivier Mercier, Ennetbaden, and Helmut Riegger, Busslingen, all of Switzerland, assignors to BBC Brown, Boveri & Company Limited, Baden, Switzerland

Filed Mar. 2, 1981, Ser. No. 239,626

Claims priority, application European Pat. Off., Mar. 3, 1980, 80200184

Int. Cl.³ C22C *9/01;* B22F *1/00*

U.S. Cl. 419—28 **9 Claims**

1. A method for producing a memory alloy based on copper, aluminum and metal selected from the group consisting of nickel, iron, manganese and cobalt, comprising the following steps:

(a) providing a powder A with a particle size of 10–200 μm of a copper based pre-alloy containing 84–90% by weight Cu, and the balance Al, providing a powder B having a particle size of 5–100 μm containing 95–99.5% by weight of aluminum and 0.5–5% by weight of copper, providing a powder C having a particle size of 10–100 μm from at least one metal selected from the group consisting of nickel, iron, manganese, and cobalt;

(b) preparing a mixture consisting essentially of 0.5–10% by weight of powder B, greater than 0 to 6% by weight of powder C, and the balance powder A;

(c) isostatically pressing said powder mixture at a pressure of at least 8000 bar, whereby a compact is produced;

(d) reducing and pre-sintering said compact produced in step (c) in a hydrogen or hydrogen/nitrogen atmosphere at 700°–1000° C. for at least 30 minutes;

(e) sintering the reduced and presintered compact in an inert atmosphere at at least 700° C. for at least 10 hours;

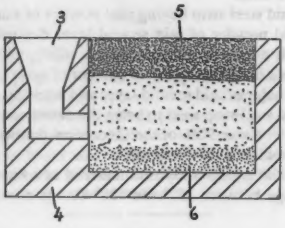
(f) alternately hot working said compact at a temperature between 700° and 1000° C. and homogenizing said compact in an inert atmosphere at a temperature of at least 700° C. for at least 30 minutes;

(g) finally annealing said compact in an inert atmosphere at a temperature between 700° and 1050° C. for 10 to 15 minutes directly followed by quenching in water.

4,365,997
WEAR RESISTANT COMPOUND MATERIAL, METHOD FOR MANUFACTURING IT AND USE OF SUCH COMPOUND MATERIAL

Johannes Jachowski, Duisburg, and Rudolf Mohs, Essen, both of Fed. Rep. of Germany, assignors to Fried. Krupp Gesellschaft mit beschränkter Haftung, Essen, Fed. Rep. of Germany

Filed May 7, 1980, Ser. No. 147,626
Claims priority, application Fed. Rep. of Germany, May 15, 1979, 2919477
Int. Cl.³ B22F *3/00, 5/00*
U.S. Cl. 148—31 **15 Claims**



1. Wear resistant compound substance comprising a cast metal matrix comprising, by weight, 1 to 4% carbon, 0.3 to 0.6% silicon, 0.5 to 1.5% manganese, 0.8 to 2.8% vanadium, 0.5 to 1.5% chromium, 2 to 10% tungsten, about 0.01% aluminum, and the remainder, iron, and, embedded in said metal matrix, a hard material in granular form, the hard material having a grain size of 0.1 to 5 mm.

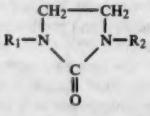
10. Method for producing a compound substance comprising melting an alloy comprising, by weight, 1 to 4% carbon, 0.3 to 0.6 silicon, 0.5 to 1.5% manganese, 0.8 to 2.8% vanadium, 0.5 to 1.5 chromium, 2 to 10% tungsten, about 0.01% aluminum, and the remainder, iron, pouring said melt into a mold, adding to said melt hard material granules having a size of 0.1 to 5 mm, the hard material being embedded in a plastic matrix comprising a plastic which evaporates without residue, and simultaneous with said addition, cooling said melt.

4,365,998
AQUEOUS INKS FOR INK JET PRINTING

Masatoshi Sugiyama; Hideo Odawara, and Nagao Takeda, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 17, 1981, Ser. No. 255,134
Claims priority, application Japan, Apr. 21, 1980, 55-52739
Int. Cl.³ C09D *11/02*
U.S. Cl. 106—22 **7 Claims**

1. An aqueous ink comprising:
water;
from about 0.2 to 15 parts by weight of a water-soluble dye; and
from about 1 to 50 parts by weight of a compound represented by Formula (I):



wherein R_1 and R_2 each independently represents a hydrogen atom, an alkyl group, a hydroxyalkyl group, or an alkoxyalkyl group.

4,365,999
CORROSION-INHIBITING METHOD FOR STEEL MATERIALS IN CONCRETE

Toshio Fujita, Toyonaka, and Toru Kashima, Nishinomiya, both of Japan, assignors to Kiresuto Kagaku Kabushiki Kaisha and Osaka Semento Kabushiki Kaisha, both of Osaka, Japan

PCT No. PCT/JP79/00053, § 371 Date Nov. 2, 1980, § 102(e) Date Sep. 10, 1980, PCT Pub. No. WO80/01802, PCT Pub. Date Sep. 4, 1980
PCT Filed Mar. 2, 1979, Ser. No. 214,004
Int. Cl.³ C04B *7/35*
U.S. Cl. 106—90 **18 Claims**

1. A corrosion-inhibiting method for steel materials in concrete or mortar containing a chloride, characterized in that
(1) a nitrite,
(2) a compound of general formula:

$$NH(R)CH\ COOH \quad (I)$$

(wherein R represents a H atom or an alkyl group having 1 to 4 carbon atoms) or salts thereof, and
(3) a hydrazine hydrate
are incorporated in the chloride containing concrete or mortar.

4,366,000
METHOD AND APPARATUS FOR PREHEATING DRY RAW MEAL PRIOR TO INTRODUCTION OF THE MEAL INTO A SUSPENSION CYCLONE PREHEATER SYSTEM SUPPLYING A ROTARY KILN

Darius A. Wadia, 96 Marine Dr., Bombay, India

Filed Oct. 13, 1981, Ser. No. 310,771
Int. Cl.³ C04B *7/02*
U.S. Cl. 106—100 **35 Claims**

1. A method for processing raw meal in an installation for calcination of granular, powdered limestone, alumina hydrate, or the like, said method including the steps of metering dry raw meal into a processing apparatus, pneumatically pumping said raw meal in the apparatus to a separate combustion chamber, supplying fuel to said combustion chamber and igniting same, heating said dry raw meal in said combustion chamber to a temperature between 100° and 500° C., pumping said heated dry raw meal to the first stage cyclone preheater of a plurality of cyclone preheaters and processing said dry raw meal through said cyclone preheater stages to a rotary kiln whereby the temperature of the gas exiting the first cyclone preheater is between 370° and 625° C. and the thermal efficiency of said processing apparatus is improved.

4,366,001
ORGANO-FUNCTIONAL POLYSILOXANE COMPOSITIONS FOR FIBER-TREATING

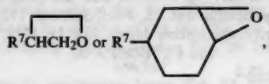
Isao Ona, Sodeuramachi, and Masaru Ozaki, Ichihara, both of Japan, assignors to Toray Silicone Co., Ltd., Tokyo, Japan

Filed Jul. 2, 1981, Ser. No. 279,926
Claims priority, application Japan, Jul. 7, 1980, 55-92453
Int. Cl.³ C04B *31/00*
U.S. Cl. 106—287.11 **8 Claims**

1. A composition for treating fibers, said composition comprising a carrier liquid and two organopolysiloxane components selected from the group consisting of

$$A(R_2SiO)_p(RSiO)_qSiR_2A \quad (A)$$
$$\quad\quad\quad

B denotes R or R^3COOR^4 or G,
D denotes R or E or G,
E denotes



G denotes $R^5{}_b O(C_2H_4O)_c(C_3H_6O)_dR^6$,
R denotes a substituted or unsubstituted monovalent hydrocarbon radical,
R^1 denotes a divalent hydrocarbon radical,
R^2 denotes a hydrogen atom or a monovalent hydrocarbon radical,
R^3 denotes a divalent hydrocarbon radical,
R^4 denotes a hydrogen atom or a monovalent hydrocarbon radical,
R^5 denotes a divalent organic radical,
R^6 denotes a hydrogen atom or a monovalent organic radical,
R^7 denotes a divalent organic radical,
a has a value of from 0 to 10,
b has a value of 0 or 1,
c has a value of from 0 to 50,
d has a value of from 0 to 50,
c+d has a value of from 2 to 100,
k has a value of from 0 to 500,
m has a value of from 0 to 100,
n has a value of from 0 to 100,
k+m+n has a value of from 10 to 500,
p has a value equal to or greater than 0,
q has a value equal to or greater than 0,
p+q has a value of from 10 to 1000,
x has a value of from 0 to 500,
y has a value of from 0 to 100,
z has a value of from 0 to 100 and
x+y+z has a value of from 10 to 500,
there being at least two $R^1(NHCH_2CH_2)_aNHR^2$ radicals per molecule of component (A), at least two R^3COOR^4 radicals and at least one G radical per molecule of component (B) and at least two E radicals and at least one G radical per molecule of component (C).

4,366,002
NON-VOLATILE HOT STRIPPER

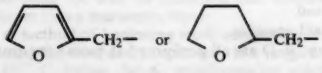
Carmen M. Carandang, Oaks, Pa., assignor to Amchem Products, Inc., Ambler, Pa.

Continuation-in-part of Ser. No. 197,135, Oct. 15, 1980, abandoned. This application Oct. 13, 1981, Ser. No. 311,058
Int. Cl.³ C03C *23/00*
U.S. Cl. 134—2 **22 Claims**

1. An aqueous alkaline composition for use at elevated temperatures to remove siccative coatings from substrates coated therewith comprising one or more alkaline compounds in an amount effective to impart a pH to the composition of about 9.5 to about 14+ and at least two of the following three materials: tetrahydrofurfuryl alcohol and the ethoxylated materials of the formula

$$RO(CH_2CH_2O)_nH$$

wherein R is



and n is about 0.5 to about 10, said ingredients being present in amounts effective to remove the siccative coating from a substrate coated therewith.

5. A composition according to claim **1** including at least about 80 g/l of said alkaline compound, at least about 1 g/l of a sequestering agent, and at least about 10 g/l of a composition-stabilizing compound selected from the group consisting of aliphatic primary alcohols, aliphatic secondary alcohols, alkyl amines and mixtures thereof.

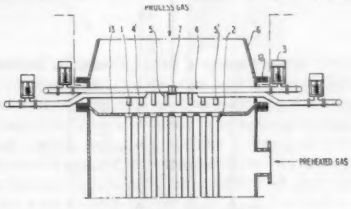
12. A composition according to claim **1** comprising an alkaline component in an amount of about 150 to about 350 g/l, said alkaline component comprising about 3.5 to about 350 g/l of sodium hydroxide and about 3.5 to about 350 g/l of potassium hydroxide, about 1 to about 100 g/l of a sequestering agent, about 50 to about 100 g/l of a composition-stabilizing compound selected from the group consisting of methanol, monoethanolamine, diethylene glycol, n-butyl amine and mixtures thereof, about 2.5 to about 200 g/l of tetrahydrofurfuryl alcohol, and about 5 to about 200 g/l of an ethoxylated material.

14. A method of stripping siccative coatings from substrates coated therewith comprising contacting the coated substrate with the composition of claim **1**, **5** or **12** at a composition temperature effective and a time sufficient to remove the siccative coating from the substrate.

4,366,003
APPARATUS AND PROCESS FOR THE PERIODIC CLEANING-OUT OF SOLIDS DEPOSITS FROM HEAT EXCHANGER PIPES

Hans D. Korte, Brühl, and Gustav Mück, Bornheim-Walberberg, both of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 25, 1980, Ser. No. 210,434
Claims priority, application Fed. Rep. of Germany, Nov. 30, 1979, 2948201
Int. Cl.³ B08B *3/02, 5/02, 9/02*
U.S. Cl. 134—18 **15 Claims**



7. A process for cleaning deposits of solids from pipes of a heat exchanger exposed to a process gas stream containing hot, finely dispersed solids, which comprises the steps of periodically flushing said pipes during the continuous operation of the process with a high speed cleaning gas stream having an excess pressure relative to the process gas stream by directing said cleaning gas stream into the process gas inlet openings of the pipes through jet nozzles adjusted centrally above said openings and connected to feed ducts provided with shut-off elements, each of said feed ducts bearing a series of jet nozzles arranged over a series of said pipes lying in one line, at least two of said feed ducts lying one above the other, the lower duct being shorter and supplying cleaning gas to the outer lying nozzles in said series and the upper duct supplying cleaning gas to the inner lying nozzles in said series, the length of said jet nozzles being dimensioned such that their outlet openings lie in the same plane, releasing said high speed cleaning gas suddenly and maintaining said periodic flushing for a short time.

15. A process for the recovery of heat and carbon black or pyrogenic inorganic oxides from a process gas, which comprises the steps of feeding said process gas to the pipes of a heat exchanger, periodically flushing said pipes with a high-speed cleaning gas stream having an excess pressure relative to the

process gas stream by directing said cleaning gas stream into the process gas inlet openings of the pipes through jet nozzles adjusted centrally above said openings and connected to feed ducts provided with shut-off elements, each of said feed ducts bearing a series of jet nozzles arranged over a series of said pipes lying in one line, at least two of said feed ducts lying one above the other, the lower duct being shorter and supplying cleaning gas to the outer lying nozzles in said series and the upper duct supplying cleaning gas to the inner lying nozzles in said series, the length of said jet nozzles being dimensioned such that their outlet openings lie in the same plane, and separating the carbon black or pyrogenic inorganic oxides from the process gas stream.

4,366,004

METHOD OF INTERNALLY CLEANING COKE CHAMBER RISERS

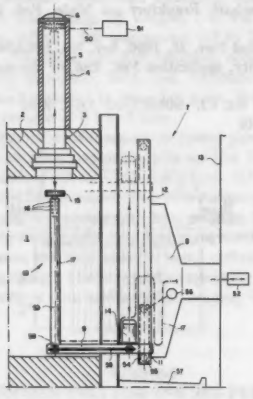
Karl Gregor, Bochum, and Kurt Asmus, Erftstadt, both of Fed. Rep. of Germany, assignors to Gewerkschaft Schalker Eisenhütte, Gelsenkirchen, Fed. Rep. of Germany

Filed Jul. 25, 1980, Ser. No. 172,196

Claims priority, application Fed. Rep. of Germany, Jul. 26, 1979, 2930351

Int. Cl.³ C23G *3/04*

U.S. Cl. 134—22.11 **1 Claim**



1. In a method of internally cleaning a riser of a coke oven chamber wherein a cleaning head is laterally introduced into said chamber through an open door thereof, and with said door open said head is elevated into said riser to remove deposits on the inner wall of said riser, upon removal of the deposits from the inner wall of said riser, said head is lowered from said riser, and thereafter the head is withdrawn laterally from the chamber, the improvement which comprises in combination:

(a) connecting said riser continuously during the entire cleaning process with a suction source capable of drawing gases from said riser;

(b) introducing a combustion-sustaining gas into said riser from said head and along said inner wall, said combustion-sustaining gas being selected from the group which consists of air and oxygen, whereby said deposits are burned off said inner wall and the burning of said deposits produces gases which are drawn from said riser in step (a); and

(c) controlling the flow of said combustion-sustaining gas from said head to said riser to maintain the oxygen supplied to the burning of the deposits at a level less than a stoichiometric proportion.

4,366,005

STEAM WASHING IN A DISHWASHER

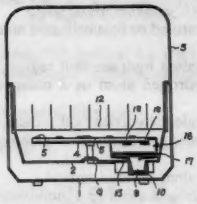
Ichiro Oguri, Yao, and Yoshihiro Koyama, Izumi, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 973,917, Dec. 28, 1978, abandoned. This application Jul. 25, 1980, Ser. No. 172,174

Claims priority, application Japan, Jan. 11, 1978, 53-2087[U]

Int. Cl.³ B08B *3/00*

U.S. Cl. 134—25.2 **11 Claims**



2. A method of washing tableware disposed within a dishwasher comprising the steps of:

preliminarily washing tableware in said dishwasher by splashing cool water having a temperature of approximately 20° C. on said tableware to initially rinse the surfaces of the tableware for removing particles and substances adhering to the tableware;

steaming said tableware and simultaneously preheating water for later use after completion of said preliminary washing step, said steam being applied for a predetermined time interval for removing particles and substances including starch, adhering to the tableware;

washing said tableware after completion of said steam washing step for an additional time period to substantially remove remaining particles by contacting said tableware with said preheated water and a predetermined quantity of additional water, said wash water containing a cleaning agent; and

rinsing said tableware for a predetermined time period.

4,366,006

PROCESS FOR RECOVERING RESIN FROM A SPENT COMMERCIAL ARTICLE

Harvey D. Ferer, and Luis F. Sierralta, both of Omaha, Nebr., assignors to Aaron Ferer & Sons Co., Inc., Omaha, Nebr.

Filed Mar. 24, 1981, Ser. No. 246,990

Int. Cl.³ B08B *7/00*

U.S. Cl. 134—38 **16 Claims**

1. A method for recovering an organic resinous material from a spent commercial article, comprising:

A. preparing a solution consisting essentially of a dialkyl ketone and tetrahydrofuran;

B. reducing said resinous material to a plurality of undissolved granules, by contacting said spent commercial article with said solution, wherein said resinous material and said granules remain at all times undissolved and do not swell because of solution infiltration;

C. separating said granules from said solution, and thereafter removing from said granules any solution adsorbed thereon; and

D. drying said granules;

wherein Steps B–D are all performed at room temperature, and

wherein said dried granules are identical in chemical composition, retain the chemical structure possessed by said resinous material in the original commercial article, and are of sufficient purity to be utilized in commercial manufacturing.

4,366,007

PERMANENT MAGNET AND PROCESS FOR MAKING SAME

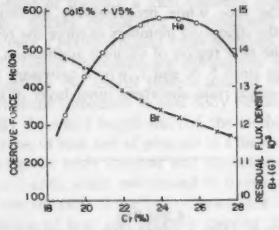
Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Continuation-in-part of Ser. No. 39,204, May 15, 1979, abandoned, which is a division of Ser. No. 769,268, Feb. 11, 1977, Pat. No. 4,171,978. This application Feb. 20, 1981, Ser. No. 236,189

Claims priority, application Japan, Feb. 14, 1976, 51-15195

Int. Cl.³ H01F *1/02*

U.S. Cl. 148—102 8 Claims



1. A method of making a hard or semihard magnetic alloy which comprises the steps of:

(A) forming a body of a spinodally decomposable alloy composition of iron-chromium-cobalt base by casting an admixture of 3 to 30% by weight cobalt, 10 to 40% by weight chromium, 0.1 to 15% by weight vanadium and the balance iron;

(B) solution-treating said body at an elevated temperature and for a period sufficient to produce a homogeneous single α-phase structure in said body; and

(C) tempering the solution-treated body at a reduced temperature and for a time period sufficient to spinodally decompose therein said single α-phase structure into a phase-separated structure consisting of an α_1-phase which is magnetic and an α_2 phase which is nonmagnetic, said phase-separated structure forming said magnetic alloy.

4,366,008

METHOD FOR HARDENING STEEL

Jun Takeuchi; Kaishu Yamazumi, and Takao Ishihara, all of Toyama, Japan, assignors to Kabushiki Kaisha Fujikoshi, Toyama, Japan

Continuation-in-part of Ser. No. 119,673, Feb. 8, 1980, abandoned. This application Mar. 20, 1981, Ser. No. 246,049

Claims priority, application Japan, Feb. 9, 1979, 54-14522; Dec. 11, 1979, 54-160573

Int. Cl.³ C21D *1/18*

U.S. Cl. 148—143 4 Claims

1. A method of hardening steel, comprising:

heating the steel at a temperature in a range not lower than 100° C. below the A_1 transformation point of the steel (about 630° C.) and not higher than 50° C. above said transformation point (about 780° C.) in an atmosphere composed solely of ammonia gas being supplied at a flow rate of from about 0.1 to 2 furnace volume per hour to austenitize a surface layer of the steel by penetration of nitrogen thereinto, and

quenching the steel to transform said austenitized surface layer into a martensite layer.

3. A method of hardening steel, comprising:

heating the steel at a temperature in a range not lower than 100° C. below the A_1 transformation point of the steel (about 630° C.) and not higher than 50° C. above said transformation point (about 780° C.) in an atmosphere composed of ammonia gas being supplied continuously at a partial pressure of from about 0.05 to 0.3, and at least one substance selected from the group consisting of (a) petroleum gas such as propane and butane, (b) endothermic gas generated by reforming petroleum gas, (c) a carburizing and reducing gas or liquid, including an organic liquid such as alcohols, esters and ketones, and (d) a neutral gas such as nitrogen and argon, to austenitize a surface layer of the steel by penetration of nitrogen thereinto, and

quenching the steel to transform said austenitized surface layer into a martensite layer.

4,366,009

METHOD OF MANUFACTURING SEMICONDUCTOR STRUCTURES BY EPITAXIAL GROWTH FROM THE LIQUID PHASE

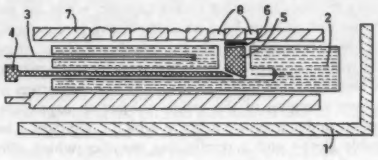
Philippe Jarry, Sucy en Brie; Pierre Guittard, Montlhery, and Alphonse Ducarre, Ste-Genevieve des Bois, all of France, assignors to U.S. Philips Corporation, Tarrytown, N.Y.

Filed Dec. 8, 1980, Ser. No. 213,982

Claims priority, application France, Dec. 7, 1979, 79 30103

Int. Cl.³ H01L *21/208*

U.S. Cl. 148—171 4 Claims



1. A method of manufacturing a semiconductor device in which layers of gallium arsenide or gallium aluminum arsenide doped with doping elements such as germanium are grown from the liquid phase on a substrate in an epitaxy furnace, the last growth melt is wiped off, and the resulting structure is cooled down to a selected temperature in the furnace, characterized in that during cooling of the structure its upper surface is contacted with a liquid gallium melt in such a manner that the portion of the doping elements present in the remaining drops of the last growth melt that are not removed by the wiping off are dissolved.

4,366,010

SMOKE-PRODUCING PYROTECHNIC COMPOSITION AND ITS APPLICATION

Georges A. Sédat, 16h rue Jonyh-Prirrugue, 87000 St. Raphael, France

Continuation-in-part of Ser. No. 944,564, Sep. 21, 1978, abandoned. This application Jul. 15, 1980, Ser. No. 169,204

Int. Cl.³ C06B *45/10*

U.S. Cl. 149—19.6 17 Claims

1. A castable colored smoke-producing pyrotechnic composition which burns at 190° to 300° C., comprising a synthetic resin, an oxidizing agent, and a sublimable organic coloring substance, wherein said resin decomposes at a temperature between 190° and 300° C. and said oxidizing agent is formed of the combination of two compounds, the first compound being a potassium or sodium chlorate and the second compound being guanidine nitrate.

4,366,011

HEAT-RECOVERABLE REINFORCED ENCLOSURE

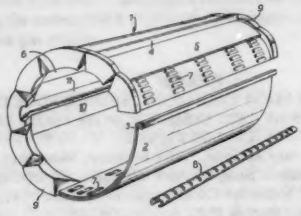
Jean-Marie E. Nolf, Beauvechain, Belgium, assignor to N.V. Raychem S.A., Kessel-lo, Belgium

Continuation of Ser. No. 12,014, Feb. 14, 1979, abandoned. This application Dec. 1, 1980, Ser. No. 211,674

Claims priority, application United Kingdom, Feb. 21, 1978, 6907/78

Int. Cl.[3] **B29C** *27/00;* **H02G** *13/06;* **F16L** *55/16;* **H01R** *3/00*

U.S. Cl. 156—86 **24 Claims**



1. A brace which comprises a heat-recoverable sleeve provided with a reinforcing member positioned in the direction of recovery of the sleeve which allows recovery of the sleeve, the reinforcing member including means capable, when the member is in the configuration held when the sleeve is recovered, of resisting forces tending to return the member to the configuration held when the sleeve is in its recoverable configuration.

24. A method of enclosing an article which comprises positioning over a region of the article subject to expansion or deformation under pressure a brace which comprises a heat-recoverable sleeve and a reinforcing member which allows recovery of the sleeve, the reinforcing member being positioned in the direction of recovery of the sleeve and which, when in the configuration held when the sleeve is recovered, resists forces tending to return the member to the configuration held when the sleeve is in its recoverable configuration, and recovering the sleeve, whereby the expansion or deformation of the article is substantially reduced.

4,366,012

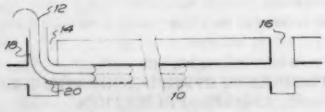
IMPREGNATION PROCESS

Eric Wood, Ossett, England, assignor to Insituform International Inc., Great Britain

Filed Feb. 5, 1981, Ser. No. 231,690

Int. Cl.[3] **B05D** *7/22;* **B32B** *1/08*

U.S. Cl. 156—93 **3 Claims**



1. A method of impregnating with a curable resin an inner layer of resin absorbent material disposed in an elongate flexible tube having an outer layer formed by an impremeable film, the method comprising the steps of

(1) introducing into one end of the elongate tube a mass of the curable resin sufficient to impregnate the entire resin absorbent inner layer of the tube,

(2) forming a window in the impermeable outer layer of the tube at a distance from said one end of the tube,

(3) drawing through the window a vacuum in the interior of the tube downstream of said one end by disposing over the window a cup connected by a flexible hose to a vacuum source which cup prevents ingress of air into the interior of the tube while the tube is being evacuated, the outer layer of the tube being substantially impermeable to air,

(4) beginning at or near the end at which the curable resin mass was introduced, passing the tube between squeezing members which force the resin to flow towards the region of vacuum application as the tube progresses through the squeezing members,

(5) when the resin reaches the vicinity of the region of vacuum application, removing the cup and sealing the window,

(6) providing another window in the impermeable layer of the tube downstream of the previously formed window,

(7) drawing through the new window a vacuum in the interior of the tube while progressively moving the tube through the squeezing members to force the resin to flow toward the new region of vacuum application, and

(8) repeating steps 5, 6, and 7, where necessary to impregnate the entire resin absorbent inner layer of the flexible tube.

4,366,013

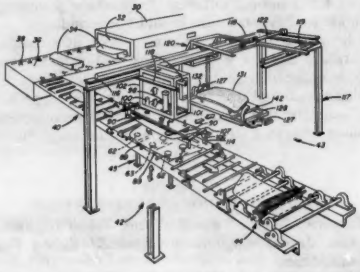
SHAPED MOLD AND A METHOD OF USING SAME TO ASSEMBLE SANDWICH OF A SHEET OF FLEXIBLE INTERLAYER MATERIAL WITH BENT GLASS SHEETS

James L. Valimont, Cheswick, and Hershel L. Phares, Apollo, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jul. 28, 1981, Ser. No. 287,607

Int. Cl.[3] **B32B** *17/04, 17/10*

U.S. Cl. 156—102 **6 Claims**



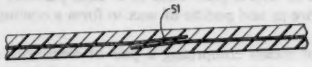
1. In the method of assembling a sheet of flexible interlayer material against a hot sheet of bent glass while the latter is at a temperature at which the flexible interlayer sheet becomes tacky on contact with said hot glass sheet, the steps of holding a sheet of flexible interlayer material preparatory to assembling said sheet against a bent glass sheet oriented to have a concave elevational configuration comprising supporting said sheet of flexible interlayer material on a vacuum mold having a first wall whose shape conforms to said configuration while said mold is oriented so that said first wall has a convex configuration in elevation, drawing vacuum through said first wall to support said sheet of flexible interlayer material thereagainst, changing the orientation of said vacuum mold to change the orientation of said first wall so that the latter has a concave elevational configuration while continuing to draw vacuum through said first wall to maintain said sheet of flexible interlayer material thereagainst in a shape conforming to said configuration, and moving said vacuum mold into alignment with said bent glass sheet while supporting said sheet of flexible interlayer material thereagainst preparatory to transfer said flexible sheet from said first wall of said vacuum mold to said hot bent glass sheet.

4,366,014

METHOD OF MAKING JOINTS IN BELTING

Ernest Pollard, Bingley, England, assignor to Pollard V-Belt (Guernsey) Limited, Guernsey, England

Filed Apr. 6, 1981, Ser. No. 251,655
Int. Cl.[3] B65B *13/02*
U.S. Cl. 156—157 11 Claims



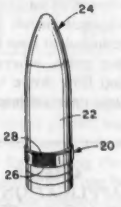
1. A method of forming a joint between adjacent ends of belting, said belting comprising an elongated fusible body element having a predetermined cross-sectional configuration and predetermined cross-sectional dimensions which are uniform throughout the length thereof and an elongated constraining element embedded in said body element throughout substantially the entire length thereof, the method comprising the application of heat and of pressure in a direction transverse to said elongated body element and constraining element to said adjacent ends while maintained in overlapping relationship such that the ends of the body element are fused together, the application of heat and pressure causing the ends of the constraining element to be displaced transversely with respect to their associated body elements, the displacement of one end taking place in the opposite direction to the displacement of the other end so that in the finished joint the ends of the constraining element form an overlapping joint embedded in the fused material of the body element, the cross-sectional configuration and dimensions of said finished joint being substantially the same as said cross-sectional configuration and dimensions of said body element.

4,366,015

RUBBER DRIVING BAND, ARTILLERY SHELL EMPLOYING SAME, AND METHOD OF MAKING THE BAND AND ASSEMBLING SAME IN THE SHELL

Myles N. Murray, 15 Skyline Dr., Chagrin Falls, Ohio 44022

Filed May 16, 1980, Ser. No. 150,336
Int. Cl.[3] F42B *31/00*
U.S. Cl. 156—185 8 Claims



1. A method of forming a driving band on an artillery shell comprising the steps of:

(a) coating a substantially longitudinally inelastic fabric strip with uncured rubber,

(b) partially curing the rubber coated strip to a tacky state,

(c) wrapping the coated strip circumferentially to form an annular preform with adjacent turns of the strip being adhered together by the tacky rubber, and

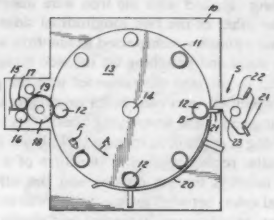
(d) molding and curing the preform directly on an artillery shell casing to form an integral band directly molded on the shell casing.

4,366,016

METHOD AND APPARATUS FOR PRODUCING A PLASTIC SLEEVE

Leonard W. Golden, Jr., Portage, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Jun. 25, 1981, Ser. No. 277,311
Int. Cl.[3] B29D *23/10*
U.S. Cl. 156—218 9 Claims



1. In an apparatus for forming a plastic sleeve wherein a strip of sheet stock is fed to a winding apparatus including a rotatable turret having a plurality of rotatable sleeve forming mandrels positioned circumferentially thereof and wherein individual blanks are severed from the strip and formed about each mandrel by wrapping it around the mandrel and overlapping the trailing edge of each blank so that it is exterior of the leading edge of each blank, the improvement comprising

a rotating side seam mechanism positioned adjacent the turret and the path of the mandrels,

a seal bar mounted on said mechanism and having a sealing surface adapted to engage the overlapping ends of the blank to form a fused seam having a thickness corresponding generally to the thickness of the strip of sheet stock,

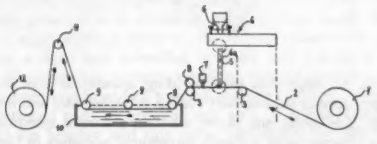
said contacting surface including a first portion extending radially outwardly greater than a second portion such that a greater pressure is applied to one part of the seam than the other.

4,366,017

PROCESS AND APPARATUS FOR CONTINUOUSLY APPLYING REINFORCING TAPES FROM SYNTHETIC RESIN, ON THE LONGITUDINAL SIDES OF PLASTIC SHEETS

Bruno G. Siri, Via Oreglia 25, I-18015 Riva Ligure (Imperia), Italy

Filed Feb. 27, 1981, Ser. No. 239,060
Claims priority, application Italy, Mar. 28, 1980, 67479 A/80
Int. Cl.[3] B29D *23/05*
U.S. Cl. 156—244.11 2 Claims



1. A process of continuously applying tapes from synthetic resin, provided with an armature, on the longitudinal sides of plastic sheets adapted to serve as protective coverings for rows of vines or for floriculture greenhouses, characterized in that it consists in continuously unrolling a plastic sheet from a roller support; in continuously routing said plastic sheet in a plane situated below two extruder heads, one of said extruder heads facing one longitudinal side and the other extruder head facing the other longitudinal side of said plastic sheet; in continuously feeding the extruders of said two extruder heads with thermoplastic material; in continuously extruding through each of said

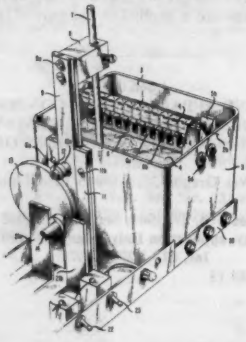
two extruder heads a flexible tubing from plastic sheet; in continuously rolling from a bobbin (one bobbin per extruder head) a metal (preferably iron) wire; in continuously feeding said iron wire into said flexible tubing from plastic sheet; in routing said flexible tubing from extruded plastic sheet (one tubing for each of said two extruder heads) with the iron wire inserted therein simultaneously on one and the other of the two longitudinal sides of the plastic sheet; in passing said flexible plastic tubing (applied with the iron wire inserted therein on one and the other of the two longitudinal sides of the plastic sheet) below a punch synchronized to function with the feed of the plastic sheet and punching on the side lying on the inside with respect to the iron wire inserted into the plastic flexible tubing, at specified intervals, holes or eyelets in said flexible plastic tubing and in the underlying plastic sheet on which said flexible tubing is applied; in routing said plastic sheet (with the flexible plastic tubing applied in the form of a tape with the iron wire inserted therein on one and the other of its two longitudinal sides) between pressure rollers so as to bring about the cohesion; in continuously passing said plastic sheet with the flexible plastic tubing having the iron wire inserted therein and applied in the form of a tape on its two longitudinal sides through a bath of coolant water; and, finally, in continuously rolling said plastic sheet with the flexible plastic tubing having the iron wire inserted therein and applied in the form of a tape on its two longitudinal sides on a receiving-roller type support.

4,366,018

METHOD AND APPARATUS FOR PRODUCING INTRAMURAL WAX SEALS BETWEEN THE COMPARTMENTS OF MULTIMEDIA TUBES

Ralph C. Gross, Flemington, N.J., assignor to Hunterdon Occupational Training Center, Flemington, N.J.

Filed Feb. 26, 1981, Ser. No. 238,437
Int. Cl.³ B05D *1/28;* B29C *27/04*
U.S. Cl. 156—273.9 **13 Claims**



12. An apparatus for providing intramural wax seals in a compartment substantially closed on three sides and having an open side along one plane, wherein a wire is interposed into said compartment through intramural openings in the lateral walls thereof, in a direction substantially parallel to said one plane, the terminals of said wire extending beyond said lateral walls;

a container of a bath of molten wax;

means for utilizing the terminals of said wire to support said compartment with said open side directed downward toward said bath;

a device comprising at least one projection dimensioned for accommodation in said compartment, said projection having a recess formed in its upper edge designed to pick up a puddle of wax from said bath, said recess having a depth exceeding the thickness of said wire, and extending in the principal direction of said wire when disposed in said supporting means;

means mechanically coupled to said device for moving said device up and down vertically in reciprocating motion from a first lower position in which said recess is disposed below the level of said bath to pick up a puddle of wax, to a second upper position in which said recess including said puddle of wax is positioned to at least partially immerse said wire in said puddle of wax to form a coating on said wire;

additional means comprising a pair of electrodes disposed one above the other in substantially parallel spaced-apart relation for engaging said compartment including the terminals of said wax-coated wire, wherein said wire is disposed in substantially vertical current-carrying relation between said electrodes; and

means for completing the circuit to said electrodes causing said wax-coated wire to heat up to the melting point of said wax, thereby causing said wax to flow down vertically to form a wax seal between at least one said intramural opening and said wire.

13. The method of providing intramural wax seals in a compartment substantially closed on three sides and having an open side along one plane, wherein a wire is interposed into said compartment in a direction substantially parallel to said one plane through intramural openings in the lateral walls thereof, the terminals of said wire extending beyond said lateral walls;

providing a bath of molten wax;

utilizing the terminals of said wire to support said compartment with said open side directed downward toward said bath;

providing a device having at least one projection dimensioned for accommodation in said compartment;

forming a recess at least exceeding the thickness of said wire in the upper edge of said at least one projection designed to pick up a puddle of wax from said bath, wherein said recess is extended in the principal direction of said wire when disposed in said supporting means;

moving said device up and down vertically in reciprocating motion from a first lower position in which said recess is disposed below the level of said bath for picking up said puddle of wax, to a second upper position wherein said recess including said puddle of wax is positioned to at least partially immerse said wire in said puddle of wax, forming at least a partial wax coating on said wire;

subsequently, after said wire is at least partially coated, disposing said wax coated wire enclosed in said compartment in substantially vertical current-carrying relation between the electrodes of an electrical circuit; and

completing said electrical circuit to a source of electrical power to provide sufficient heat to heat up said wax coating to the melting point, whereby said wax coating is caused to melt and flow down vertically forming a wax seal between at least one said intramural opening and said wire.

4,366,019

BELT APPLICATION ROLLER

Robert F. Jones, Westfield Center, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Sep. 2, 1980, Ser. No. 183,597
Int. Cl.³ B29H *17/02, 17/00*
U.S. Cl. 156—360 **4 Claims**

1. An apparatus for forming a green tire having plural circumferential belts on a carcass, and a tread overlaid on said belts, comprising:

(a) a frame,

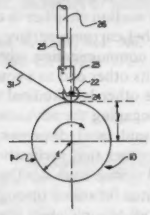
(b) bead flanges mounted on said frame for longitudinal axial movement relative to each other, said bead flanges being adapted to support beads of said carcass when it is mounted on the flanges,

(c) means for effecting said longitudinal axial relative movement,

(d) means for rotating said bead flanges simultaneously,

(e) means for inflating said carcasss with air so as to provide a compressible air cushion therewithin,

(f) roller means radially transversely disposed relative to the longitudinal axis of said carcass so that a belt contacts said roller before said belt is printed on said carcass, said roller's longitudinal axis being located so as to provide a predetermined fixed printing location at which said carcass, with at least one belt thereon, is confined by contact with said roller over a segment of said carcass defined by a radial angle of less than 5 degrees, and



(g) means to effect movement of said roller means to locate said roller means at said printing location, and intermittently to effect movement of said roller means away from said printing location.

4,366,020

APPARATUS FOR BONDING WOOD GIRDERS

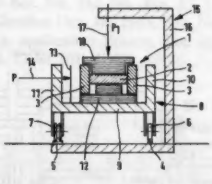
Claus Overlack, Gernsbach, Fed. Rep. of Germany, assignor to Casimir Kast GmbH & Co. KG, Gernsbach, Fed. Rep. of Germany

Filed Sep. 8, 1981, Ser. No. 300,222

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1980, 3036793

Int. Cl.³ B30B *15/30, 15/34*

U.S. Cl. 156—380.2 **14 Claims**



1. In an apparatus for the HF bonding of lengths of wood together for forming a wood girder, made up of a support on which such lengths of wood may be rested in a lined-up condition, a pressing system for pressing the said lengths at a side thereof and acting towards at least one bond therebetween, and a transporter for moving the pressed-together girder made up of the said lengths past HF electrodes, the invention residing in that said transporter is a carriage having a floor and side walls designed to take up the girder between the side walls, the carriage being designed with a length equal to that of the longest girder to be bonded and having said pressing system on at least one of said side walls, said apparatus further having a fixed-position pressing unit for pressing the said lengths against said floor while at the same time lining up the same in relation to each other, and a system for firstly working the pressing unit and then the pressing system, the last-named keeping the said lengths in the girder in relation to each other after being freed by said pressing unit.

4,366,021

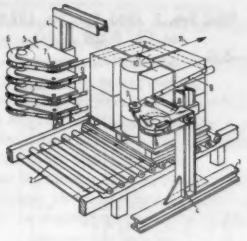
DEVICES FOR APPLYING A THERMOPLASTIC TAPE AROUND AN OBJECT OR A STACK OF OBJECTS

Auke van der Wal, Oss, Netherlands, assignor to Vereenigde Metaaalverpakking en Hechtdraad Industrie B.V. MVM-ENDRA, Oss, Netherlands

Filed Mar. 27, 1981, Ser. No. 248,496

Int. Cl.³ B29C *17/04*

U.S. Cl. 156—468 **10 Claims**



1. A device for applying a thermoplastic tape around an object or a stack of objects, said device comprising at least one set of two tape supply reels arranged at a distance from each other, two tape strainers arranged on the same side of the supply reels and mounted for movement towards and from each other and serving to force towards each other the portions of a tape extending between an object or a stack of objects and the supply reels after said tape has been applied in the form of a substantially U-shaped loop around part of the circumference of the object or stack of objects, said tape consisting of two previously interconnected tape portions, each of which emanates from a respective one of said two supply reels, two clamping faces formed on each one of the tape strainers and facing the other tape strainer, the clamping faces of each tape strainer being spaced apart in a direction transverse to the direction of movement of the tape strainers, a movable stop member having two side plates which are adapted to be inserted between the two tape strainers and are each bounded by a clamping face co-operating with a clamping face of one tape strainer, a clamping face co-operating with a clamping face of the other tape strainer and a supporting face which extends between the clamping faces of the respective side plate in the direction of movement of the tape strainers and faces the other side plate, tape bending-over members, of which each one is attached movably to a respective tape strainer, the first one of said bending-over members being mounted on its tape strainer for reciprocation in the direction of movement of the tape strainers in the space confined between the two side plates of the stop member and for movement towards the other tape strainer during its forward stroke, said first bendfng-over member being provided with side faces adapted to be moved along and at a small distance from the supporting faces of the stop member, a front face extending between said side faces and facing the other tape strainer, a melting through member protruding from said front face towards the other tape strainer and being situated midway between said side faces and a heating element for heating said side faces, said front face and said melting through member, the second one of said bending-over members being movably mounted on the other tape strainer and consisting of two parts adapted to be forced towards the supporting faces of the stop member, said second bending-over member having faces movable with respect to its clamping faces, by means of which, during operation, tape portions first come into contact with the heated front face of the first bending-over member and thereafter are forced towards the supporting faces of the stop member, and means for moving the tape strainer, the stop member, the first bending-over member with the melting-through member and the second bending-over member in a given order of succession, wherein at least

said side faces and said front face of the first tape bending-over member are formed by the outer surface of the heating element constituting a bent strip of electrical resistance material forming part of said bending-over member, said strip being electrically insulated from the rest of the device and adapted to be connected to an electric power source.

4,366,022

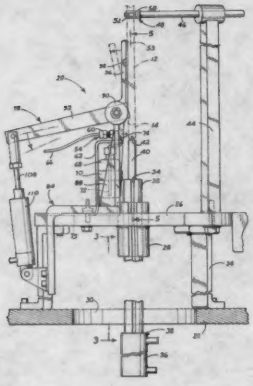
ARROW FLETCHING APPARATUS

Thomas E. Coffman, 1357 Carlile La., Myrtle Point, Oreg. 97458

Filed Sep. 2, 1980, Ser. No. 182,978

Int. Cl.³ B32B *31/00*

U.S. Cl. 156—538 **8 Claims**



1. Apparatus for securing on an arrow shaft, a vane having a fin and a flared base, said apparatus comprising

support means for releasably supporting a shaft in an upright position,

a carrier for holding a vane disposed laterally of a shaft supported in said support means, said carrier having an elongate, upright slot dimensioned to releasably receive the fin of a vane, while excluding the base of the vane, said slot having an open top accommodating downward insertion of the fin of a vane therein and a closed end limiting downward movement of the fin of a vane,

said carrier being shiftable toward and away from a position where the base of a vane whose fin is releasably received in said slot is pressed against an axially extending region on a shaft supported in said support means, and

shifting means for shifting said carrier.

4,366,023

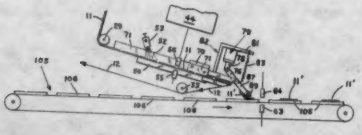
MECHANISM FOR APPLYING LABELS AND THE LIKE

Helmut Voltmer, Park Ridge, N.J., assignor to NJM, Inc., Fairfield, N.J.

Filed Sep. 8, 1981, Ser. No. 300,054

Int. Cl.³ B44C *1/00*

U.S. Cl. 156—542 **2 Claims**



1. An applicator unit for attachment to a pressure sensitive label dispenser arranged to supply successive detached pressure sensitive labels arranged on a backing strip to an article applying station, said applicator unit comprising a mounting portion adapted to be fastened to the label dispenser, a plate extending from said mounting portion and centrally cut out to provide a pair of longitudinally extending extensions spaced by an open ended slot, a tubular shaft rotatably mounted on the outer free ends of said extensions, a straight lever secured to said shaft between said extensions and having one arm located in said open ended slot and the other arm projecting outwardly from said tubular shaft, a suction mouthpiece having one longitudinal side edge portion connected to one end of said shaft and having an interior suction chamber in communication with a lower perforated label carrying surface, the interior of said tubular shaft being in communication with said suction chamber and connected at its other end to a source of suction, label pressing means on the other longitudinal side edge portion of said mouthpiece for engaging the advancing edge portion of a label discharged by said label dispenser, the unit being so positioned on the dispenser that successive labels supplied by the latter will be fed across said label carrying surface and supported by the vacuum furnished through the latter with the advancing edge portions of such labels positioned beneath said pressing means, a solenoid connected to the inner end of said one lever arm and operable when energized to raise such lever arm about the longitudinal axis of said shaft and thereby to pivot said mouthpiece downwardly about said longitudinal axis to cause said pressing means to adhere the front edge portion of the label carried by said mouthpiece to an article area, and a spring connected to the outer end of said other lever arm for returning said mouthpiece and said lever to their starting positions.

4,366,024

PROCESS FOR MAKING SOLAR CELL BASE MATERIAL

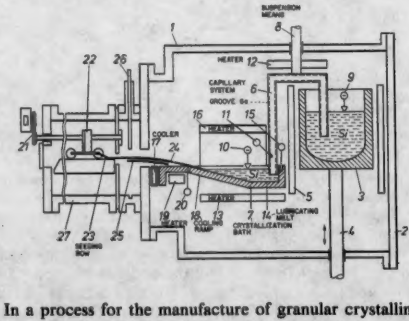
Gerhard Ast, Emmerting; Josef Dietl, Neuötting; Dieter Helmreich, Burghausen; Hans-Dieter Miller, Stammham, and Erhard Sirtl, Marktl/Inn, all of Fed. Rep. of Germany, assignors to Heliotronic Forschungs-und Entwicklungsgesellschaft fur Solarzellen-Grundstoffe mbH, Burghausen, Fed. Rep. of Germany

Filed Jan. 25, 1980, Ser. No. 115,317

Claims priority, application Fed. Rep. of Germany, Jan. 26, 1979, 2903061

Int. Cl.³ C30B *11/02*

U.S. Cl. 156—607 **12 Claims**



1. In a process for the manufacture of granular crystalline silicon sheets of preferred orientation, having a thickness of between 0.2 and 2 mm and suitable for use as a base material for solar cells, wherein a silicon melt is brought into contact with a second molten phase and is subsequently allowed to solidify, the improvement comprising the steps of:

charging a pulling vessel with molten elemental silicon and a non-elemental lubricating melt which is immiscible with silicon but will wet silicon and has a melting point below that of silicon;

supercooling at least one wall of said pulling vessel to 5° to 100° C. below the melting point of silicon; and

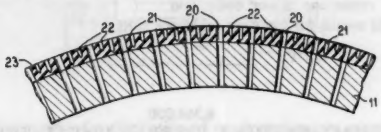
continuously drawing off an elemental silicon film solidifying on said cooled wall but separated from said wall by a thin layer of the lubricating melt.

4,366,025

SUCTION PRESS ROLL

Ambrose L. Gordon, Jr., South Beloit, and Leroy H. Busker, Rockton, both of Ill., assignors to Beloit Corporation, Beloit, Wis.

Filed Jun. 4, 1981, Ser. No. 270,364
Int. Cl.³ D21F 3/08
U.S. Cl. 162—358 **8 Claims**



1. In a press couple for dewatering a traveling web in a papermaking machine, the combination comprising:

first and second press means defining a press nip therebetween with said second means being a cylindrical press roll shell;

water receiving means for passing through said nip in contact with the roll and carrying a traveling paper web through the nip; and

means defining a plurality of holes in the roll surface accommodating travel of water from the web through the water receiving means,

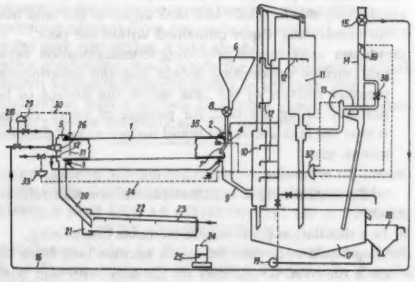
said holes including a first group extending axially fully through the shell and a second group of holes being more shallow than the first holes and having a closed inner end.

4,366,026

PROCESS FOR THE PRODUCTION OF COKE OR SEMICOKE

Gustave Leyendecker, St-Avold, France, assignor to Houilleres du Bassin de Larraine, Freyming Merlebach, France

Continuation of Ser. No. 162,244, Jun. 23, 1980, abandoned. This application Oct. 16, 1981, Ser. No. 312,079
Claims priority, application France, Jun. 25, 1979, 79 16233
Int. Cl.³ C10B 27/00, 49/06, 57/14
U.S. Cl. 201—1 **9 Claims**



1. In a process for continuously producing a coke or semicoke product having from 1% to 20% of volatile constituents therein from coal grains, coal fines or mixtures of grains and fines containing more than 15% of volatile constituents therein and having a swelling number less than 8, said process comprising:

(a) providing a rotatable tubular oven which has an upstream end and a downstream end and which is slightly inclined downwards from the upstream end to the downsteam end,

(b) introducing the coal grains and/or fines into the upstream end of the oven while rotating the tubular oven,

(c) permitting the material to progress from the upstream end to the downstream end of the oven,

(d) supplying heat from a hot gas generator to the downstream end of the oven,

(e) regulating the hot gas generator to produce either stoichiometric neutral or reducing hot gases,

(f) extracting the coke or semicoke product from the downstream end of the oven, and

(g) exhausting the production gas and other carbonization by-products by means of an exhaust fan,

the improvement consisting essentially, in combination, of:

(1) controlling the rate of pressure reduction produced by the exhaust fan means in accordance with pressure conditions inside the oven, and

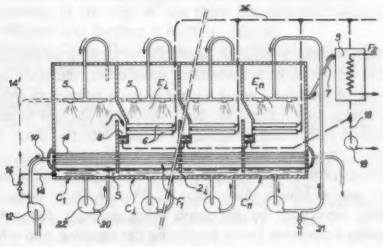
(2) injecting into the tubular oven an auxiliary ballast fluid to maintain a slightly elevated positive pressure in the oven in relation to the atmospheric pressure outside the oven.

4,366,027

DEVICE FOR DISTILLATION OR CONCENTRATION OF A SOLUTION AND MORE PARTICULARLY FOR DESALINATION OF A SALINE SOLUTION SUCH AS SEA WATER

Fernand Lauro, Grenoble, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Continuation of Ser. No. 98,056, Nov. 28, 1979, abandoned. This application Sep. 2, 1981, Ser. No. 298,740
Claims priority, application France, Nov. 29, 1978, 78 33717
Int. Cl.³ B01D 1/26, 3/02
U.S. Cl. 202—174 **7 Claims**



1. A multiple effect device for the distillation of a solution comprising:

a plurality of chambers C_1 to C_n, forming multiple effects,

means for feeding the solution into the chamber C_1, means for establishing a communication between said chambers C_1 to C_n for flowing the non-vaporized solution in series from chamber C_1 to the chambers C_2 to C_n,

means for heating the solution in chamber C_1, said means consisting of an heat exchanger in which an auxiliary fluid circulates, wherein said auxiliary fluid is constituted by heat rejections,

means for heating the solution in each of the chambers C_2 to C_n, said means consisting of an heat exchanger in which said auxiliary fluid circulates and a condenser in which the vapor formed in the preceding chamber circulates,

means for supplying in series the heat exchangers of chambers C_1 to C_n with said auxiliary fluid,

means for distributing the vapor formed in one of the chambers C_1 to C_{n-1} within the condenser of the following chamber,

means for distributing the vapor formed in chamber C_n within a condenser cooled by a second fluid,

means for contacting the solution in chamber C_1 with the surface of said heat exchanger;

means for contacting the solution in each of the chambers C_2 to C_n with the surfaces of said heat exchangers and said condensers, and means for recovering the condensate produced in the condensers.

4,366,028

JAMB BRICK SUPPORT FOR COKE OVEN DOORS

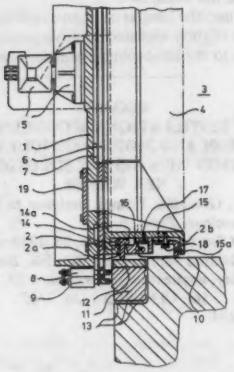
Werner Abendroth, Haltern, Fed. Rep. of Germany, assignor to Firma Carl Still GmbH & Co. K.G., Fed. Rep. of Germany

Filed Nov. 6, 1981, Ser. No. 318,991

Claims priority, application Fed. Rep. of Germany, Nov. 27, 1980, 3044607

Int. Cl.³ C10B *25/06, 25/16*

U.S. Cl. 202—248 **7 Claims**



1. In a coke oven door assembly for closing an opening to an oven chamber of a horizontal coke oven, the door assembly being of the type having a door body, a refractory door member mounted to the door body on a side thereof adjacent the oven chamber and designed to extend into the oven chamber above the oven sole, a jamb brick support mounted at the bottom of the door body on the side adjacent the oven chamber, and at least a lower part of the refractory door member being supported by the jamb brick support, the coke oven having a chamber frame bordering the opening, and wherein in the position in which the opening is closed by the door assembly, the jamb brick support is extended closely above the oven sole and the chamber frame, the improvement wherein the jamb brick support comprises a propping member mounted to the underside of the jamb brick support for movement in the longitudinal direction of the coke oven, and wherein, in the position in which the opening is closed by the door assembly, said propping member is reposed at least indirectly on the chamber frame for supporting the door assembly.

4,366,029

PIVOTING BACK ONE-SPOT COKE CAR

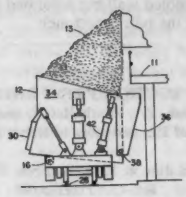
Robert P. Bixby, Pittsburgh, and Eugene Ziegler, McKeesport, both of Pa., assignors to Koppers Company, Inc., Pittsburgh, Pa.

Filed Aug. 31, 1981, Ser. No. 297,753

Int. Cl.³ B61D *3/10, 9/02*; C10B *39/14*

U.S. Cl. 202—262 **2 Claims**

1. In a one-spot coke quenching car, comprised of a frame and a body rotatably mounted thereon, said body comprised of ends and a front and back side and a bottom wall, wherein the ends, front and back side and bottom wall of said body are rotatable as a unit, the improvement comprising:



(a) said back side being pivotably mounted to said ends to allow said back side to pivot forward and toward the centerline of said body, and

(b) means for pivoting said back side.

4,366,030

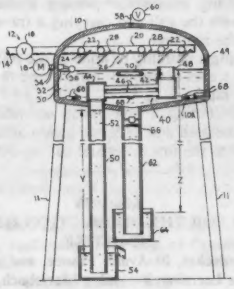
SUBATMOSPHERIC PRESSURE DISTILLATION AND/OR COOLING METHOD AND MEANS

Max F. Anderson, Stewardson, Ill. 62463

Filed Oct. 12, 1979, Ser. No. 84,373

Int. Cl.³ B01D *3/10*

U.S. Cl. 203—11 **9 Claims**



1. A distillation system comprising

a vacuum tank at subatmospheric pressure,

liquid supply means for supplying liquid to be distilled to said tank to partially fill the same,

condensing means inside said tank adjacent the tank bottom for condensing vapor contained within the tank,

condenser inlet means providing communication between said surface condensing means and the subatmospheric pressure interior of the tank above the surface of liquid partially filling the tank for passage of vapor contained within the tank above the liquid surface to said condensing means, and

means for removing condensate from said condensing means while maintaining a subatmospheric pressure within the tank.

6. In a distillation process, the elements comprising,

feeding liquid to be distilled into a vacuum tank from which air is removed to partially fill the tank with said liquid,

evaporating liquid fed into the tank to provide a vapor thereof within said tank,

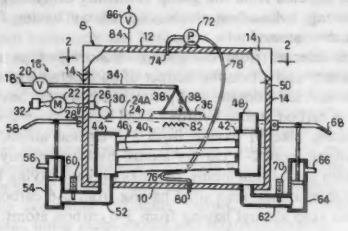
cooling vapor by condensing means located inside the vacuum tank in the liquid adjacent the bottom of the tank for condensing at least a portion of said vapor, and

removing condensate from said condensing means while maintaining vapor pressure within the vacuum tank at a subatmospheric level.

4,366,031
ALCOHOL-WATER MIXTURE DISTILLATION

Max F. Anderson, Stewardson, Ill. 62463

Filed Sep. 22, 1980, Ser. No. 189,313
The portion of the term of this patent subsequent to Dec. 28, 1999, has been disclaimed.
Int. Cl.³ B01D 3/10
U.S. Cl. 203—18 15 Claims



1. In apparatus for distillation of an alcohol-water mixture for recovery of alcohol therefrom, the combination including
a vacuum tank,
surface condensing means located inside said tank adjacent the tank bottom,
condenser inlet means providing communication between said surface condensing means and the interior of the tank above said surface condensing means,
condenser outlet means extending from said surface condensing means,
means for filling said tank and surface condensing means with an alcohol-water mixture while venting air from the tank, and
means in communication with said condenser outlet means for removing a portion of the mixture from the filled tank including all of the mixture contained in said condensing means while preventing entry of air into the tank to produce a subatmospheric pressure condition in the tank for evaporation of alcohol from the mixture surface and cooling of remaining mixture, alcohol vapor passing into said condensing means through said condenser inlet means and condensing therein.

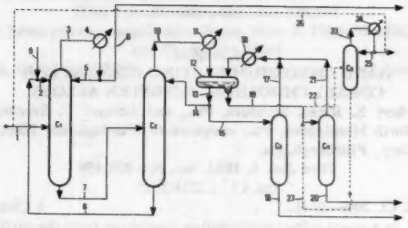
11. In a distillation process for recovering alcohol from an alcohol-water mixture, or the like, comprising
filling a vacuum tank with a mixture while venting air from the tank,
removing a portion of the mixture from the filled tank while preventing entry of air into the tank thereby producing a vacuum in the tank above mixture remaining therein,
evaporating alcohol from the surface of mixture remaining in the tank converting it into alcohol vapor,
locating condensing means inside the tank adjacent the tank bottom within mixture remaining in the tank, and
condensing at least a portion of alcohol vapor in said condensing means obtaining alcohol therefrom.

4,366,032
PROCESS FOR PRODUCING DEHYDRATED ALCOHOLS FOR USE AS COMPONENT OF A MOTOR FUEL COMPOSITION

Paul Mikitenko, Noisy Le Roi, and Lionel Asselineau, Paris, both of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Sep. 1, 1981, Ser. No. 298,432
Claims priority, application France, Sep. 1, 1980, 80 18901
Int. Cl.³ B01D 3/40; C07C 29/84
U.S. Cl. 203—18 10 Claims

1. A process for producing dehydrated aliphatic alcohols from a mixture of light and heavy aliphatic alcohols with water, comprising the following steps of:
(a) introducing the alcohols - water mixture into a first fractionation zone at an intermediary point thereof,
(b) introducing a selective solvent at a point of the first fractionation zone above the point of introduction of the mixture,
(c) withdrawing at the top a vapor effluent containing the dehydrated light aliphatic alcohols,
(d) withdrawing from the bottom a liquid phase of high selective solvent content and containing water and heavy alcohols,
(e) introducing said liquid phase into a second fractionation zone,
(f) withdrawing at the top of the second factionation zone a vapor effluent consisting of an heteroazeotropic mixture of water with heavy alcohols,
(g) withdrawing from the bottom of the second fractionation zone a liquid phase consisting of the selective solvent freed to a large extent of water and feeding it back to step (b),



(h) condensing the hetero-azeotropic mixture of step (f) into two liquid phases, a light phase of high alcohol content and a heavy phase of increased water content and separating these two phases
(i) withdrawing the light phase obtained in step (h) and feeding at least a fraction thereof into a third fractionation zone,
(j) withdrawing at the top of the third fractionation zone a vapor effluent and feeding it back to step(h),
(k) withdrawing from the bottom of the third fractionation zone a liquid phase consisting of dehydrated heavy aliphatic alcohols,
(l) withdrawing the heavy phase obtained in step (h) and introducing at least a portion thereof into a fourth fractionation zone,
(m) withdrawing at the top of the fourth fractionation zone a vapor effluent and feeding it back to step (h), and
(n) recovering from the bottom of the fourth fractionation zone a liquid phase consisting essentially of water,

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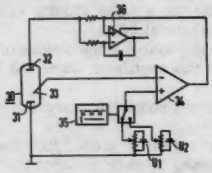
4,366,033
METHOD FOR DETERMINING THE CONCENTRATION OF SUGAR USING AN ELECTROCATALYTIC SUGAR SENSOR

Gerhard Richter, Erlangen; Günter Luft, Lauf, and Ulrich Gebhardt, Langensendelbach, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Apr. 11, 1979, Ser. No. 29,128
Claims priority, application Fed. Rep. of Germany, Apr. 20, 1978, 2817363
Int. Cl.³ G01N 27/52
U.S. Cl. 204—1 T 13 Claims

1. A method for determining the concentration of sugar in the presence of interfering foreign substances, especially for determining glucose in a body fluid, by means of an electrocatalytic sugar sensor comprising a measuring electrode, the measuring electrode adapted to be alternatingly set potentiostatically to a reactivation potential and a measuring potential and the current flowing during the measuring period evaluated as the measurement signal, comprising impeding the resupply of the interfering substances to the measuring electrode by a

hydrophilic diaphragm, of a thickness less than one hundred micrometers and a diffusion coefficient for glucose of less than 10^{-7} cm^2 sec^{-1}, placed in front of the measuring electrode in



such a manner that a diffusion limit current adjusts itself during the reactivation phase in the oxidation of the foreign substances, and performing the evaluation of the current after a time delay relative to the start of the measuring period.

4,366,034

HARD CHROMIUM PLATING PROCESS FOR COBALT-CHROMIUM-TUNGSTEN ALLOYS

Herbert E. Ricks, Sarasota, Fla., and Edward F. Sverdrup, North Huntingdon, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 4, 1981, Ser. No. 270,459
Int. Cl.³ C25D *5/38*
U.S. Cl. 204—32 R **6 Claims**

1. In a process for electroplating chromium onto the surface of a cobalt-based metallic substrate, wherein said substrate comprises 40–60% cobalt, 19–25% chromium, 10–20% tungsten, the improvement which comprises:

etching said surface in a ferric chloride solution prior to said electroplating, said ferric chloride etching being with a 1–45% ferric chloride solution for 1–200 minutes at 10°–100° C.

4,366,035

ELECTRODEPOSITION OF GOLD ALLOYS

Peter Wilkinson, Cinderford, England, assignor to Engelhard Corporation, Iselin, N.J.

Filed Apr. 23, 1980, Ser. No. 143,051
Claims priority, application United Kingdom, Apr. 24, 1979, 7914220; Apr. 24, 1979, 7914221
Int. Cl.³ C25D *3/62*
U.S. Cl. 204—44 **25 Claims**

1. An aqueous, alkaline cyanide-free electroplating bath for depositing a white gold alloy onto a substrate which comprises:

(1) an alkali metal gold sulphite or ammonium gold sulphite;

(2) a water soluble copper alloying salt or copper alloying complex;

(3) a water soluble palladium alloying salt selected from the group consisting of alkali metal palladium sulphite, ammonium palladium sulphite or palladium citrate; and

(4) an alkali metal sulphite or ammonium sulphite.

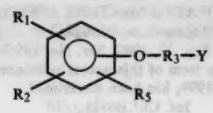
4,366,036

ADDITIVE AND ALKALINE ZINC ELECTROPLATING BATH AND PROCESS USING SAME

Ronald J. Lash, Rochester, and Roy W. Herr, Troy, both of Mich., assignors to Occidental Chemical Corporation, Warren, Mich.

Filed Sep. 8, 1981, Ser. No. 300,316
Int. Cl.³ C25D *3/22*; C07D *231/06*; C07C *95/08*; C07D *233/04*
U.S. Cl. 204—55 R **17 Claims**

1. A compound having the following structural formula:



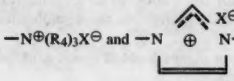
wherein

R_1 is selected from the group consisting of hydrogen, alkyl having 1–4 carbon atoms, and alkoxy having from 1–4 carbon atoms;

R_2 is selected from the group consisting of an aldehyde moiety and a bisulfite adduct of an aldehyde moiety;

R_3 is selected from the group consisting of alkyl having from 1–6 carbon atoms, hydroxy alkyl having from 2–6 carbon atoms, alkenyl having from 2–6 carbon atoms, alkynyl having from 2–6 carbon atoms, hydroxy alkenyl having from 2–6 carbon atoms, hydroxy alkynyl having from 3–6 carbon atoms, keto alkyl having from 2–6 carbon atoms, and keto alkenyl having from 3–6 carbon atoms;

Y is selected from the group consisting of

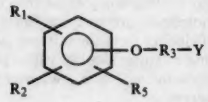


X is a halogen or sulfate;

R_4 is selected from the group consisting of alkyl hydroxy alkyl, and carboxy alkyl, each alkyl having from 1–4 carbon atoms; and

R_5 is hydrogen or another adjoining fused six membered aromatic ring.

5. An alkaline zinc electroplating bath comprising an effective amount of a compound having the following structural formula:



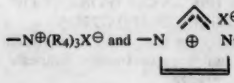
wherein

R_1 is selected from the group consisting of hydrogen, alkyl having 1–4 carbon atoms, and alkoxy having from 1–4 carbon atoms;

R_2 is selected from the group consisting of an aldehyde moiety and a bisulfite adduct of an aldehyde moiety;

R_3 is selected from the group consisting of alkyl having from 1–6 carbon atoms, hydroxy alkyl having from 2–6 carbon atoms, alkenyl having from 2–6 carbon atoms, alkynyl having from 2–6 carbon atoms, hydroxy alkenyl having from 2–6 carbon atoms, hydroxy alkynyl having from 3–6 carbon atoms, keto alkyl having from 2–6 carbon atoms, and keto alkenyl having from 3–6 carbon atoms;

Y is selected from the group consisting of



X is a halogen or sulfate;

R_4 is selected from the group consisting of alkyl hydroxy alkyl, and carboxy alkyl, each alkyl having from 1–4 carbon atoms; and

R_5 is hydrogen or another adjoining fused six membered aromatic ring.

4,366,037

METHOD OF INCREASING USEFUL LIFE EXPECTANCY OF MICROPOROUS SEPARATORS

Arthur C. Schulz, North Tonawanda; Edward H. Cook, Jr., and Krishnan Viswanathan, both of Niagara Falls, all of N.Y., assignors to Occidental Chemical Corporation, Niagara Falls, N.Y.

Filed Feb. 26, 1982, Ser. No. 352,837
Int. Cl.[3] C25B *1/34, 9/00;* C23F *13/00*
U.S. Cl. 204—98 19 Claims

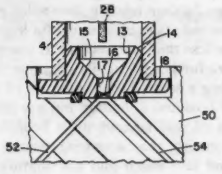
14. A method for the electrolytic production of chlorine, alkali metal hydroxide and hydrogen which comprises applying a decomposition voltage to an electrolytic cell charged with an alkali metal chloride electrolyte, said cell comprising a plurality of dimensionally stable metal anodes and foraminous steel cathodes separated by a asbestos-free, polymeric microporous separator, said cell including a foraminous protective cathode in juxtaposition with the steel cathode and microporous separator, said protective cathode having an electro-conductive metallic surface made from a material selected from the group consisting of nickel, cobalt, copper, chromium, noble metal, noble metal oxides and mixtures thereof.

4,366,038

METHOD OF CASTING IN PLACE AN ION-SENSITIVE MEMBRANE AND ION-SENSITIVE ELECTRODE USING SAID MEMBRANE

Susan D. Kearney, Weston; Gustav H. Dreier, Acton, and Alan D. Cormier, Newburyport, all of Mass., assignors to Instrumentation Laboratory Inc., Lexington, Mass.

Filed Aug. 4, 1980, Ser. No. 175,052
Int. Cl.[3] G01N *27/30;* B29C *5/00*
U.S. Cl. 204—195 M 28 Claims



1. Electrochemical electrode apparatus for use in determination of potassium ion activity in a solution consisting of an electrically insulating material defining a chamber; a passage through a wall of said chamber to an external surface arranged for exposure to a sample solution to be measured; a cast-in-place potassium sensitive membrane secured in said passage, said membrane having an external surface essentially flush with said external surface of said chamber and an internal surface in said chamber, the exposed area of said internal surface of said membrane being substantially the same as the exposed area of said external surface of said membrane, said membrane cast from a solution containing plastic matrix material, a plasticizer, a solvent and an ion sensitive active ingredient to form a substantially solid potassium ion sensitive barrier; an electrolyte solution of sodium chloride, potassium chloride, triethanolamine and formaldehyde in deionized water in said chamber in contact with said internal surface of said cast-in-place membrane, and half-cell conductor disposed in said electrolyte solution in said chamber for producing an electric potential.

17. An end cap for a disposable electrode consisting of an electrically insulating material of generally circular diameter, said end cap having a frusto-conical opening therethrough and a cast-in-place membrane in the smaller diameter opening in said frusto-conical opening.

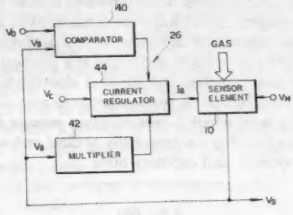
23. A method for forming an end cap for a disposable ion sensitive electrode consisting of placing an end cap having a frusto-conical opening therethrough in a casting clamp such that the small diameter of the frusto-conical opening is positioned adjacent a casting fixture leaving the larger diameter opening of said frusto-conical opening exposed, placing in said exposed frusto-conical opening an amount of a membrane casting solution not to exceed about 20 microliters and allowing the solvent in the membrane casting solution to evaporate leaving a bonded cast membrane in the smaller diameter of said frusto-conical opening.

4,366,039

OXYGEN SENSING DEVICE HAVING MEANS FOR CONTROL OF CURRENT TO PRODUCE REFERENCE OXYGEN PARTIAL PRESSURE

Masaaki Uchida; Hidetoshi Kanegae, both of Yokohama, and Shigeo Ishitani, Yokosuka, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Feb. 26, 1981, Ser. No. 238,637
Claims priority, application Japan, Mar. 3, 1980, 55-25212
Int. Cl.[3] G01N *27/46*
U.S. Cl. 204—195 S 12 Claims



1. A device for sensing oxygen contained in a gas atmosphere comprising:

(1) an oxygen-sensitive element having an oxygen ion conductive solid electrolyte layer, a reference electrode layer laid on a surface of said solid electrolyte layer and substantially entirely covered with a shield layer and a measurement electrode layer laid on a surface of said solid electrolyte layer and spaced from said reference electrode layer so as to contact a gas subject to sensing, said reference and measurement electrode layers and at least one of said solid electrolyte layer and said shield layer being microscopically porous and gas-permeable; and

(2) a control circuit electrically connected to said oxygen-sensitive element to cause a DC control current, to flow through said solid electrolyte layer between said reference and measurement electrode layers to cause migration of oxygen ions through said solid electrolyte layer from selected one of said reference and measurement electrode layers toward the other to thereby establish a reference oxygen partial pressure at the interface between said reference electrode layer and said solid electrolyte layer, the control circuit comprising:

(a) comparator means for comparing a reference voltage and an output voltage developed between said reference and measurement electrode layers of said element;

(b) multiplier means for multiplying said output voltage by a constant coefficient; and

(c) regulation means for regulating the intensity of said control current by utilizing the outputs of said comparator means and said multiplier means whereby the intensity of said control current varies depending upon the magnitude of said output voltage when the output of said comparator means indicates a predetermined one of the compared two voltages is higher than the other.

4,366,040

CAPILLARY-REFERENCE ELECTRODE

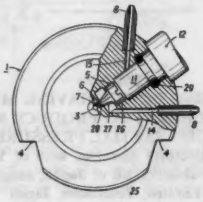
Hermann Marsoner, and Christoph Ritter, both of Graz, Austria, assignors to Hans List, Graz, Austria

Filed Sep. 9, 1981, Ser. No. 300,557

Claims priority, application Austria, Sep. 10, 1980, 4562/80; Jul. 8, 1981, 3025/81

Int. Cl.³ G01N *27/30*

U.S. Cl. 204—195 R **11 Claims**



1. A capillary reference electrode, comprising a capillary body with a capillary bore, a chamber connected by an electrolytic bridge with a test sample capable of being introduced into said capillary bore, and a reference electrode extending into said chamber, the chamber being provided with an inlet and an outlet for charging said chamber with electrolyte, said inlet in the installed state of said capillary body, is arranged in a geometrically low position and said outlet at a geometrically high position on said chamber and for said electrolytic bridge is provided a communicating passage between said chamber and said capillary bore which communicating passage adjacent to said capillary bore has a substantially conical end with a communication bore to said capillary bore.

4,366,041

METHOD OF PREPARING A CATHODE-DIAPHRAGM UNIT

Malcolm Korach, Pittsburgh, Pa., and Ronald D. Chamberlin, Wadsworth, Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Feb. 18, 1981, Ser. No. 235,454

Int. Cl.³ C25B *9/00, 11/03, 13/06, 13/08*

U.S. Cl. 204—252 **42 Claims**

29. An electrolytic cell comprising an anode, a foraminous cathode, and a permeable diaphragm therebetween, said diaphragm comprising a self-adherent, entangled web of slurry deposited asbestos fibers and thermoplastic resin, said diaphragm prepared by the method comprising first depositing an adherent, destructible film on the foraminous cathode, said adherent, destructible film being thermally destructible at temperatures where the thermoplastic resin is fluid, and thereafter depositing the asbestos fibers and thermoplastic resin thereon.

4,366,042

SUBSTITUTED COBALT OXIDE SPINELS

Donald L. Caldwell, and Mark J. Hazelrigg, Jr., both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 25, 1981, Ser. No. 247,431

Int. Cl.³ C25B *11/06*

U.S. Cl. 204—290 F **14 Claims**

1. An electrically-conductive composite comprising an electrically-conductive substrate having, on at least a portion thereof, a conductive spinel coating, said coating comprising

a metal cation substituted cobalt oxide spinel structure conforming substantially to the empirical formula $M_xZ_yCo_{3-(x+y)}O_4$,

where M represents at least one metal of the Groups consisting of IB, IIA, and IIB of the Periodic Table,

where Z represents at least one metal of the Group IA of the periodic table,

where x is an integer greater than or equal to zero, but less than 1,

where y is an integer greater than zero, but not greater than 0.5,

where the sum of x and 2y is greater than zero, but not greater than 1,

and where the amounts of M, Z, and Co are sufficient to substantially satisfy the valence requirements of oxygen in the spinel structure.

4,366,043

METHOD AND APPARATUS FOR HEAT PROCESSING PULVERIZED BROWN COAL

Zinovy F. Chukhanov, ulitsa D. Ulyanova, 3, kv. 40; Zinovy Z. Chukhanov, ulitsa Obrucheva, 6, kv. 352; Sergei A. Tsuprov, B. Vuzovsky pereulok, 1, kv. 26; Ivan V. Lyashenko, Lesnaya ulitsa, 45, kv. 89; Danil M. Apter, ulitsa Gorkogo, 46/7, kv. 13; Anatoly M. Nikolaev, ulitsa Scherbakovskaya, 5, kv. 76, and Vadim A. Karasev, Leninsky prospekt, 16, kv. 30, all of Moscow, U.S.S.R.

Filed Aug. 2, 1978, Ser. No. 930,198

Int. Cl.³ C10G *1/00*

U.S. Cl. 208—8 R **1 Claim**

1. Method of heat processing pulverized brown coal, which comprises heating said pulverized brown coal in a first stage by a heat carrier which is substantially devoid of free oxygen in less than one second to a temperature of about 500°–800° C. at which thermal decomposition of said brown coal takes place, thus forming a first stage mixture of heated solid particles of brown coal and of a vapor and gas mixture, removing said vapor and gas mixture for further processing to produce gaseous and liquid products, passing said heated solid particles into a second stage, further heating said solid particles of brown coal in said second stage by means of a heat carrier devoid of free oxygen in less than one second to a temperature of about 600°–900° C. to further thermally decompose said brown coal, thereby forming a second stage mixture of heated solid particles of brown coal and a vapour and gas mixture, removing a major portion of said second stage heated solid particles of brown coal, passing the remaining heated solid particles of brown coal and said vapor and gas mixture from said second stage to said first stage while further heating the same during such passage by means of a gaseous heat carrier devoid of free oxygen to a temperature of about 870°–1000° C., thus forming a draught which causes the solid particles to move, said further heated remaining mixture from said second stage acting as heat carrier for said first stage.

4,366,044

PROCESS FOR CONVERSION OF COAL TO HYDROCARBON AND OTHER VALUES

Rollan Swanson, c/o Chemroll Enterprises, Inc., 100 Wall St., New York, N.Y. 10036

Continuation-in-part of Ser. No. 63,824, Aug. 6, 1979, abandoned, Ser. No. 114,207, Jan. 22, 1980, and Ser. No. 140,604, Apr. 15, 1980. This application Jan. 5, 1981, Ser. No. 220,021

The portion of the term of this patent subsequent to Dec. 28, 1999, has been disclaimed.

Int. Cl.³ C10G *1/06, 1/00, 47/02;* C10J *3/16*

U.S. Cl. 208—10 **51 Claims**

1. A process for conversion of coal to gaseous hydrocarbons and volatile distillates comprising the steps of:

reacting coal or peat and a hydrosulfide, a sulfide or a polysulfide of an alkali metal, hydrates thereof, or mixtures thercof in presence of water, wherein water is added during the reaction, at a rate sufficient to hydrogenate the coal or peat to obtain the desired end product cut of gas or liquid or mixtures of both, adding sulfur or hydrogen sulfide or neither, said hydrogen sulfide being added, on

space time velocity basis, from about 10 to about 30 ml/min/liter, said reaction being at a temperature between 50° C. and up to 450° C. at a pressure from subatmospheric to about 5 atm., and recovering volatile liquid distillates and hydrocarbon gases as hydrocarbon values.

4,366,045

PROCESS FOR CONVERSION OF COAL TO GASEOUS HYDROCARBONS

Rollan Swanson, c/o Chemroll Enterprises, Inc., 100 Wall St., New York, N.Y. 10005

Continuation of Ser. No. 114,207, Jan. 22, 1980, abandoned, which is a continuation-in-part of Ser. No. 63,824, Aug. 6, 1979, abandoned. This application May 29, 1981, Ser. No. 268,190
The portion of the term of this patent subsequent to Dec. 28, 1999, has been disclaimed.
Int. Cl.³ C10G *1/06, 1/00;* C10L *1/00;* C10J *3/16*
U.S. Cl. 208—10 34 Claims

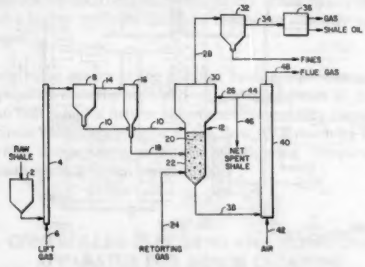
1. A process for conversion of coal to gaseous hydrocarbons and volatile distillates comprising the steps of:
reacting coal or peat and a hydrosulfide or sulfide of an alkali metal or mixtures thereof in presence of water, up to an amount such that up to a hydrogenated end product of one or two carbon atoms is formed at a temperature between 50° C. and up to 450° C. substantially at atmospheric pressure, and recovering volatile liquid distillates and hydrocarbon gases.

4,366,046

SIZE SEPARATION OF OIL SHALE PARTICLES FOR EFFICIENT RETORTING

Corey A. Bertelsen, Oakland, and Gene M. Handel, Lafayette, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Mar. 23, 1981, Ser. No. 246,562
Int. Cl.³ C10B *53/06;* C10G *1/00*
U.S. Cl. 208—11 R 5 Claims



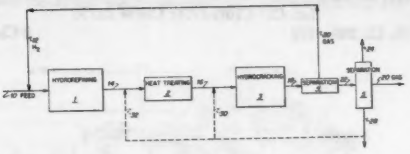
1. In a process for retorting oil shale which includes the steps of feeding particulate oil shale containing both fine- and coarse-grained material into the upper part of a retorting vessel, heating the oil shale as it moves downward by mixing therewith a particulate hot heat transfer material to pyrolyze the volatile hydrocarbons, introducing a non-oxidizing stripping gas into the bottom of the retorting vessel at a velocity sufficient to partially fluidize the particles in the retort and entrain the fine-grained particles of oil shale causing an upward flow of gas countercurrent to the movement of the descending oil shale to carry away the volatile hydrocarbons, removing the retorted oil shale particles from the bottom of the retort, and recovering the volatile hydrocarbons from the stripping gas, wherein the improvement comprises separating prior to retorting a fine shale fraction containing particles smaller than a preselected particle size from the oil shale feed stream entering the retorting vessel and introducing said fine oil shale fraction as a separate feedstream into the retorting vessel at a position below the top of the bed of downward moving shale.

4,366,047

COMBINATION HYDROREFINING, HEAT-TREATING AND HYDROCRACKING PROCESS

William E. Winter, and Bong H. Chang, both of Baton Rouge, La., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Jun. 2, 1981, Ser. No. 269,590
Int. Cl.³ C10G *45/02, 69/00*
U.S. Cl. 208—89 7 Claims



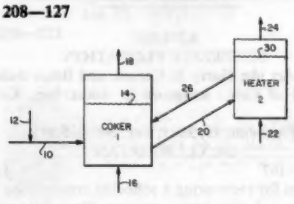
1. A process for upgrading a heavy hydrocarbonaceous oil feed, which comprises the steps of:
(a) contacting said oil feed with added hydrogen in the presence of a hydrorefining catalyst at hydrorefining conditions, in a hydrorefining zone;
(b) heat-treating at least a portion of the entire effluent of said hydrorefining zone, said portion including normally liquid hydrocarbons and hydrogen, in a heat-treating zone, in the absence of a catalyst at conditions such as to avoid any significant cracking of said normally liquid hydrocarbons, said conditions including a temperature in the range of about 500° to about 720° F., for a period of time ranging from about 0.25 hour to about 6 hours;
(c) passing at least a portion of the entire heat-treated effluent, including hydrogen and normally liquid hydrocarbons, to a hydrocracking zone;
(d) subjecting said portion of heat-treated effluent to hydrocracking conditions in the presence of a hydrocracking catalyst in said hydrocracking zone, and
(e) recovering a hydrocracked normally liquid hydrocarbonaceous product.

4,366,048

FLUID COKING WITH THE ADDITION OF SOLIDS

William J. Metrailer, and Steven Wiechert, both of Baton Rouge, La., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Jul. 9, 1981, Ser. No. 281,918
Int. Cl.³ C10G *9/00*
U.S. Cl. 208—127 9 Claims

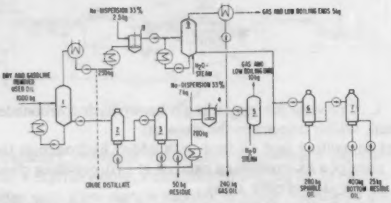


1. In a fluid coking process comprising the steps of: contacting a hydrocarbonaceous oil chargestock having a Conradson carbon content of at least about 5 weight percent with hot fluidized solids in a fluidized coking bed contained in a coking zone maintained in a fluidized state by the introduction of a fluidizing gas and operated at coking conditions, to produce a vapor phase product and a solid carbonaceous material which deposits on said fluidized solids, the improvement which comprises adding to said chargestock inert solid particles in an amount sufficient to provide from about 2 to about 10 weight percent total solids, based on said oil prior to introducing said chargestock into said coking zone.

4,366,049
PROCESS FOR RECYCLING OF USED LUBRICATING OILS

Helmut Knorre, Seligenstadt; Manfred Langer, Karlstein; Friedrich Fauser, Hammersbach, and Willi Fischer, Seligenstadt, all of Fed. Rep. of Germany, assignors to Leybold-Heraeus GmbH, Cologne and Degussa Aktiengesellschaft, Frankfurt, both of, Fed. Rep. of Germany

Filed Sep. 30, 1980, Ser. No. 192,561
Claims priority, application Fed. Rep. of Germany, Oct. 6, 1979, 2940630
Int. Cl.³ C10G *7/00*; C10M *11/00*
U.S. Cl. 208—179 **2 Claims**



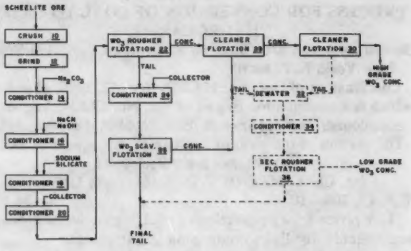
1. A process for recycling used oils comprising:
selecting used oil which has been dried and has had the gasoline removed,
distilling said used oil at a temperature less than 300° C. to produce a distillate in a first stage,
reacting said distillate with finely divided sodium metal or sodium hydride to produce a first reaction mixture,
stripping said first reaction mixture with water or steam, in a first flasher,
removing gas and low boiling ends in said first flasher,
removing a residue from said first stage and treating said residue in at least one molecular still, at a temperature of less than 300° C. and at a pressure of less than 2 mbar,
recovering crude base oil in said molecular still,
contacting said crude base oil with finely divided sodium metal or sodium hydride to produce a second reaction mixture,
conducting said second reaction mixture to a second flasher and injecting steam or water into said flasher to flash off volatives,
recycling at least a portion of the bottoms of the said first flasher to the bottoms of the second flasher, and
recovering the gas oil product from the first flasher.

4,366,050
SCHEELITE FLOTATION

Eric J. Olin, Arvada; Harry B. Carson, and Brian Ball, both of Golden, all of Colo., assignors to Amax Inc., Greenwich, Conn.

Filed Jan. 19, 1981, Ser. No. 225,911
Int. Cl.³ B03D *1/14*
U.S. Cl. 209—167 **11 Claims**

1. A process for recovering a scheelite concentrate by froth flotation from a scheelite ore containing silicate minerals, other calcareous minerals and sulfide minerals which comprises grinding the ore sufficiently fine to liberate the scheelite grains while minimizing production of slimy fines; pulping the ore with water to form a slurry; conditioning the slurry with at least one alkali metal carbonate in small but effective amounts to depress the silicate minerals, the slurry having a pH value between about 10 and 11; conditioning the carbonate-containing slurry with an alkali metal cyanide in small but effective amounts to depress the sulfide minerals; conditioning the pH-adjusted slurry with at least one water-soluble alkali metal silicate selected from the group consisting of sodium silicate and potassium silicate in small but effective amounts to depress calcareous minerals other than scheelite; adding to the silicate-conditioned slurry at least one fatty acid collector selected from the group consisting of oleic acid, linoleic acid and tall oils in conjunction with an emulsifying agent in small but effective amounts to coat the scheelite grains; agitating the slurry to which the collector has been added with sufficient intensity to disintegrate floccules of scheelite, scheelite grains and other calcareous mineral grains and to preferentially re-

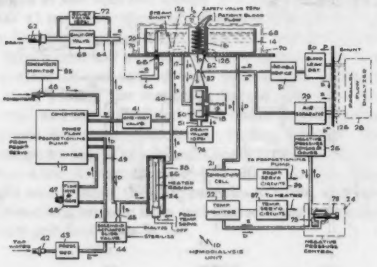


flocculate the scheelite grains for a time sufficient to produce upon flotation a concentrate having a grade of at least about 50% WO_3; adding a frother to the collector-conditioned slurry; and subjecting the collector-conditioned slurry to froth flotation to recover as a froth product a scheelite concentrate having a grade of at least 50% WO_3.

4,366,051
HEMODIALYSIS SYSTEM

Halbert Fischel, 14802 Newport Ave., Apt. 2D, Tustin, Calif. 92680

Filed Nov. 19, 1976, Ser. No. 743,222
Int. Cl.³ B01D *31/00*
U.S. Cl. 210—96.2 **11 Claims**



1. A compact hemodialysis system including a dialyzer comprising:
canister means having an interior chamber for receiving a dialysate solution and means for draining solution in excess of a selected amount;
a proportioning pump responsive to control signals for feeding dialysate solution to the interior chamber of the canister means, the proportioning pump receiving an inlet water flow and an inlet saline concentrate flow and providing outlet water and concentrate flows in specific proportions comprising a feed rate flow of dialysate solution;
circulation pump means including conduit means coupled to the canister means for delivering dialysate solution to the dialyzer at a rate which may be independent of the feed rate flow;
means for returning the solution through the dialyzer to the canister means, the canister means time averaging variations in concentrate from the proportioning pump to prevent abrupt changes in dialysate properties delivered

to the dialyzer and draining off excess from the canister means;

means including conduit means coupled to the circulation pump means and to said canister means for defining a suction loop, the suction loop including negative pressure means for circulating the dialysate solution from the canister means in the suction loop independent of the feed flow from the proportioning pump to the canister means, and wherein the suction loop in addition include means responsive to the dialysate for providing control signals for control of the proportioning pump;

means internal to the hemodialysis system for passing steam throughout the conduit means and the canister means to sterilize the system so that the unit may be used thereafter with different patients without danger of contamination, said means internal to the hemodialysis system comprising a resistive heating element having an exterior casing in the feed flow path, and a cylindrical sleeve about and larger than the casing and means for admitting water at a lower end of the heater between the sleeve and casing and for allowing the escape of saturated steam at the upper end of the heater, the heater being disposed in an upright position so that forced vertical convection drives steam upwardly preventing steam collection and overheating adjacent the heated core surface;

means for shunting exterior couplings of the conduit means to provide a confined pressurizable multi-path volume having a drain outlet, a liquid retaining lower cavity along the flow path and a conduit coupled to the drain outlet from the lower end of the cavity, and pressure release means coupled to the drain oulet for regulating the maximum pressure available in the system to develop a pressure-temperature equilibrium upon generation of adequate steam in the presence of liquid water to sterilize the dialysis system by steam at temperatures substantially in excess of the atmospheric boiling point of water to adequately destroy bacterial and viral germs;

means for enclosing the canister means to enable steam to contact all exposed surfaces of the canister means, said means for enclosing including safety valve means operable at a higher pressure than said means for maintaining pressure;

and

drain valve means in the conduit having a lower operating pressure than the means for maintaining steam at pressure, so that liquid is driven out of the lower cavity through the drain valve means prior to the flow path reaching equilibrium temperature, and thereby allowing complete flow path surface steam penetration.

4,366,052

CONTROLLED FLOODING AND SKIMMING APPARATUS FOR BEACH CLEANING

Charles C. Cloutier, P.O. Box 885, Morgan City, La. 70380

Division of Ser. No. 166,666, Jul. 7, 1980, Pat. No. 4,302,339.
This application Jun. 10, 1981, Ser. No. 272,433
Int. Cl.³ B01D *21/00*
U.S. Cl. 210—199 **13 Claims**

1. Apparatus for cleaning a beach to remove floatatable material such as oil residue and other debris, comprising:

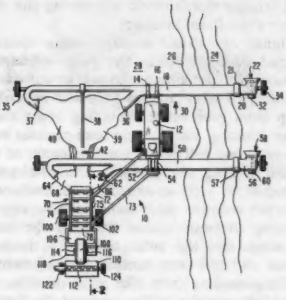
means for flooding a selected, localized area of the beach to be cleaned, whereby floatatable material is caused to rise to the surface of the beach; and

skimmer/separator means for picking up said floatatable material from said selected, localized area and for separating said material from said flooding water.

9. Apparatus for cleaning sand containing oil, oil residues, and other flotatable debris, comprising:

flooding means for introducing to a localized area of sand to be cleaned a continuous flow of water under low pressure and low velocity and in a quantity sufficient to flood the localized area and to produce a pool of water at the surface of the sand, the flood of water producing a lifting action on any bouyant materials in or on the sand within the localized area to cause oil, oil residues, and other floatatable debris to rise toward the surface of the sand and to float in the pool of water, said flooding means introducing said water at a velocity and pressure sufficiently low to minimize the entrainment of sand in said pool of water;

skimmer means adapted to remove material from the surface of said pool of water while said localized area is flooded, said removed material including floating oil, oil residues and other debris together with a small quantity of water and incidental water-entrained and debris-entrained sand;



separator means adapted to receive said removal material, to separate said floating oil, oil residues and other debris from the water and water-entrained said included in the material picked up by said skimmer means, and to return such water and water-entrained sand to said localized area; and

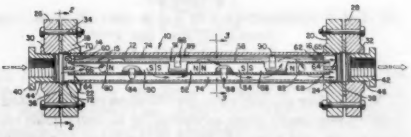
means for advancing said flooding means, skimmer means and separator means along the sand to be cleaned to advance said localized area of flooding to progressively separate and remove floatatable oil, oil residues and other debris from the sand in situ, without removal of the sand and without environmental damage to the sand.

4,366,053

MAGNETIC LIQUID TREATING DEVICE

Carl Lindler, Summerville, S.C., assignor to Descal-A-Matic Corporation, Norfolk, Va.

Filed May 15, 1981, Ser. No. 264,166
Int. Cl.³ B01D *35/06*
U.S. Cl. 210—222 **6 Claims**



1. A magnetic liquid treating device comprising:

an outer cylindrical housing having outer ends and outer and inner walls;

inner fittings removably attached to the ends of the outer cylindrical housing;

outer fittings removably attached to the inner fittings;

spacer members between said inner fittings and said outer fittings;

end connections removably attached to the outer fittings;

an inner cylindrical housing having apertures near the ends thereof and having inner and outer walls;

a plurality of magnets contained within the inner cylindrical housing between the apertures, said plurality of magnets

being arranged longitudinally and in axial alignment with each other and arranged such that like poles are adjacent each other;

a first cruciform member having plural legs thereon and having an outer circular flange, said legs press fitted within one end of the outer cylindrical housing, said outer circular flange abutting against an outer edge of said outer cylindrical housing, said plural legs having arcuate slots therein for receiving one end of the inner cylindrical housing;

a second cruciform member being of uniform diameter and having plural legs thereon press fitted within the opposite end of the outer cylindrical housing, said plural legs having arcuate slots therein supporting the other end of the inner cylindrical housing;

said inner cylindrical housing being concentrically positioned with respect to the outer cylindrical housing by reason of its attachment to said cruciform members; and

a plurality of semi-circular baffles in spaced apart relationship from each other extending along the length of the inner housing, each of said semi-circular baffles extending through one half of the inner diameter of the outer cylindrical housing, said plurality of semi-circular baffles staggered at 90° relative to each other and completing a 360° turn between the outer and inner housings whereby liquid passing through spaces between the inner cylindrical housings and the outer cylindrical housing flows in a spiral and turbulent motion and whereby the magnetic fields extending from like poles of adjacent magnets extend between the baffles and cut the liquid causing percipitation of the minerals in the liquid.

4,366,054

FILTER

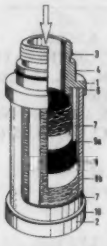
Dirk G. Kronsbein, Habsburger Strasse 12, 400 Düsseldorf 11, Fed. Rep. of Germany

Continuation of Ser. No. 23,255, Mar. 23, 1979, abandoned. This application Dec. 11, 1980, Ser. No. 215,406

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1978, 2813864

Int. Cl.³ B01D *23/14*

U.S. Cl. 210—266 **14 Claims**



1. In a filter assembly for the filtration of compressed air and other compressed gases, as well as for air and liquids such as oil and water, said assembly being in the shape of a hollow cylinder, and comprising:

a filter element having several layers with varying porosity;

inner and outer porous support jackets between which at least a portion of said filter element is located, said inner porous jacket operating at the inlet side of said filter assembly, said filter element including a finely porous layer covered on either side with a less finely porous layer;

said filter element having a plurality of said filter layers containing active charcoal of different grain size, and in which said finely porous layer is constructed as a microfibre fleece and contains most finely ground active charcoal free of binding agent;

an upper and lower cover for said assembly;

the filter element being located between said upper cover and said lower cover, said upper cover to be connected to an inlet line and opening into a hollow space; and

said lower cover tightly sealing the filter element.

4,366,055

PRESSURE FILTERS

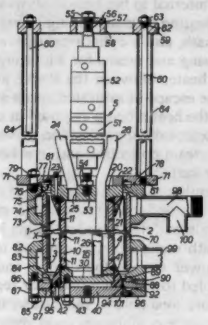
Ralph D. Gwilliam, and David Eggleston, both of St. Austell, England, assignors to English Clay Lovering Pochin & Company, St. Austell, England

Filed Mar. 10, 1981, Ser. No. 242,381

Claims priority, application United Kingdom, Mar. 18, 1980, 8009098

Int. Cl.³ B01D *29/42*

U.S. Cl. 210—350 **4 Claims**



1. In a tube pressure filter which comprises (a) a pair of generally coaxial inner and outer tubular assemblies which are arranged one within the other so as to define between them a chamber of annular, or substantially annular, cross-section and which are adapted to be supported in a generally upright position, (b) an impermeable elastic sleeve disposed within and secured to the outer one of said pair of tubular assemblies so as to divide said chamber into non-intercommunicating inner and outer compartments, (c) a filter element disposed around and supported by the inner one of said pair of tubular assemblies, (d) a slurry inlet for feeding a slurry to be pressure filtered to said inner compartment, (e) a hydraulic fluid inlet for feeding hydraulic fluid to the outer compartment, and a hydraulic fluid outlet for withdrawing hydraulic fluid from the outer compartment, (f) filtrate discharge means for use in effecting the discharge of filtrate which has passed through the filter element and through apertures in the inner tubular assembly, and (g) means for effecting relative movement of said tubular assemblies; the improvement which comprises providing means for effecting relative movement of said tubular assemblies from one to another of three operating positions of said tubular assemblies and providing a slurry inlet which extends annularly around one of said pair of tubular assemblies and which, in one of said three operating positions, cooperates with means formed by or associated with the other one of said pair of tubular assemblies to isolate said slurry inlet from said inner compartment, the arrangement being such that, in the first operating position of said tubular assemblies the slurry inlet is in communication with said inner compartment which is otherwise closed whereby a slurry to be pressure filtered can be fed to the inner compartment via said slurry inlet, in the second operating position of said tubular assemblies said inner compartment is closed and said slurry inlet cooperates with said means formed by or associated with the other one of said pair of tubular assemblies to isolate said slurry inlet from said inner compartment whereby said slurry to be pressure filtered can be dewatered, and in the third operating position of said tubular assemblies said inner compartment is open so that particulate solid can be discharged from the inner compartment.

4,366,056

FILTER HAVING A FIXED STRAINER

Philip Jackson, Paris, France, assignor to E. Beaudrey & Cie, Paris, France

Filed Feb. 5, 1981, Ser. No. 231,629
Claims priority, application France, Mar. 3, 1980, 80 04679
Int. Cl.³ B01D 29/04
U.S. Cl. 210—435 10 Claims

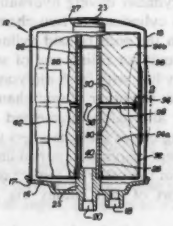
1. An industrial water filter, comprising a substantially cylindrical filter housing, inlet means extending peripherally into said housing, outlet means located axially of said housing and at one end thereof, a fixed generally cylindrical strainer located within said housing and having an internal space communicating with said outlet means, a substantially conical deflector located inside said strainer and converging towards said outlet means, and at least one fin extending radially in the path of water passing through said strainer between said deflector and said strainer from said strainer to said deflector and axially of said outlet.

4,366,057

OIL FILTER SEAL MEMBRANE

Thomas K. Bridges, and Howard Nourse, both of Fountain Valley, Calif., assignors to Kirk Bridges, Inc.

Filed Dec. 4, 1981, Ser. No. 327,422
Int. Cl.³ B01D 27/00
U.S. Cl. 210—437 12 Claims



1. In an axial flow filtering apparatus for filtering fluids having a centrally located flow means, an outlet port for passage of filtered fluid from said flow means out of said apparatus, at least one filter element comprising wound layers of tissue, and a channel extending radially outward from said flow means wherein said fluid passes through said filter element to said channel where it is conducted to said flow means and then to said outlet port, the improvement comprising:

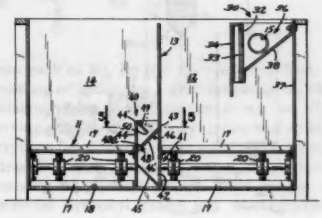
a flexible, non-porous membrane configured to be disposed in a sealing relationship about the circumference of said filter element such that said membrane partially overlaps said filter element and completely overlaps said channel, thereby preventing said fluid from entering said channel from a point outside said filter element, without first passing through at least one filter element. .

4,366,058

HIGH EFFICIENCY SETTLING SYSTEM

Girma Wolde-Michael, Little Canada, Minn., assignor to Donaldson Company, Inc., Minneapolis, Minn.

Filed Jun. 2, 1981, Ser. No. 269,623
Int. Cl.³ B01D 21/24
U.S. Cl. 210—519 15 Claims



1. In a settling tank for a fluid containing solid particulate matter and having a primary settling area, a fluid flow inlet in said primary settling area, a clean fluid reservoir area adjacent said primary settling area, and fluid inlet means for providing a fluid upflow from said settling area into said reservoir area, means for quietening the fluid flow, including:

means positioned near said inlet for transforming entering turbulent fluid flow into a more uniform, laminar flow, said means including an inlet baffle having portions with spaced apart openings therein, said openings being positioned along the length of said baffle in a staggered, substantially nonaligned arrangement; and

means submerged in said clean reservoir area adjacent said fluid inlet means for quieting the fluid upflow velocity, said means including a pair of spaced apart, generally sloping baffles, one of said baffles having portions with spaced apart, symmetrical openings therein, and adjustable flow rate means positioned above said baffles, said upflow quieting means designed and constructed to cause said fluid flow to travel in a tortuous path therethrough.

4,366,059

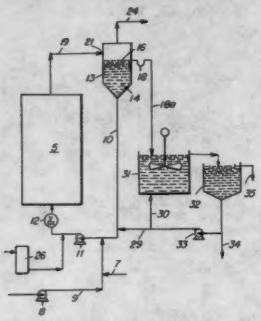
ANAEROBIC TREATMENT

Enrique R. Witt; William J. Humphrey, and James P. Cave, all of Corpus Christi, Tex., assignors to Celanese Corporation, New York, N.Y.

Continuation of Ser. No. 150,829, May 19, 1980, Pat. No. 4,315,823, which is a continuation of Ser. No. 57,545, Jul. 13, 1979, abandoned, which is a continuation of Ser. No. 737,241, Oct. 29, 1976, abandoned. This application Oct. 21, 1980, Ser. No. 198,909
The portion of the term of this patent subsequent to Feb. 16, 1999, has been disclaimed.
Int. Cl.³ C02F 3/28, 3/30
U.S. Cl. 210—615 3 Claims

1. Process for the treatment of aqueous organic waste streams in an anaerobic filter, with concomitant production of methane gas while supplying alkaline material to the filter to neutralize acids fed thereto and formed therein, to produce a liquid effluent stream containing said methane gas from said filter, said liquid effluent stream having a lower C.O.D. content than said waste stream and containing less than 600 mg per liter of volatile suspended solids, said process comprising separating said methane gas from said effluent stream, separating said liquid effluent stream into two liquid streams, hereafter termed stream a and stream b, withdrawing said liquid stream a while recycling said liquid stream b to said filter and blending said stream b together with fresh feed to said waste stream, the volumetric rate of said fresh feed being about the same as the volumetric rate of withdrawal of said liquid stream a, and the ratio of said volumetric rate of feed to the volumetric rate of said recycle being in the range of about 1:1 to 1:20, in which

process said fresh feed of said waste stream has a C.O.D. of at least about 5000 mg/l, the fresh feed is supplied at a rate which is at least about 0.5 lb. C.O.D. per cubic foot of filter per day, the mixture of said liquid b and said fresh feed has a C.O.D. of



at least 500, said filter comprises packing of such construction that the void volume is above 60%, the hydraulic feed rate in said filter is at least about 1 foot per hour, said supplied alkaline material comprising sodium formate, said acids including formic, acetic or propionic acid.

4,366,060

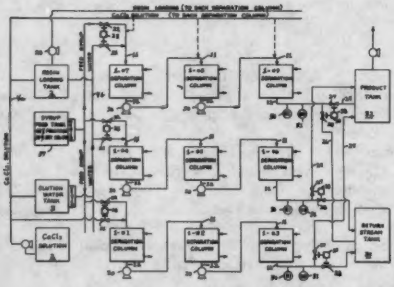
PROCESS AND EQUIPMENT FOR CHROMATOGRAPHIC SEPARATION OF FRUCTOSE/DEXTROSE SOLUTIONS

Roger S. Leiser, and Gin C. Liaw, both of Decatur, Ill., assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

Division of Ser. No. 762,072, Jan. 24, 1977, abandoned. This application Dec. 26, 1978, Ser. No. 973,494

Int. Cl.³ B01D *15/08*

U.S. Cl. 210—635 **41 Claims**



1. In a chromatographic separation process wherein the chromatographic separation column is densely packed with an adsorbent to permit the separation of a fluid feed stream containing a mixture of substances into a plurality of streams richer in one or more of said substances by alternately passing said mixed fluid feed stream and an elution fluid stream through a chromatographic separation column to obtain an effluent stream in which the adsorbent has a selective affinity for one of said substances in said fluid feed stream so that portions of said effluent stream have higher concentrations of one of the substances, and thereafter separately collecting successive portions of the effluent stream having higher concentrations of at least one of the substances, the improvement which comprises:

(a) selecting an adsorbent which will contract to a reduced volume when exposed to a concentrated solution of a selected reagent and swells to an expanded volume by removing the concentrated solution from said adsorbent;

(b) confining the adsorbent in its contracted and reduced volume condition within the chromatographic separation column; and

(c) thereafter removing a sufficient amount of the concentrated solution from the confined adsorbent to cause the adsorbent to swell so as to completely and uniformly pack the adsorbent throughout the column and thereby eliminate channeling within said column when said fluid stream is passed therethrough.

4,366,061

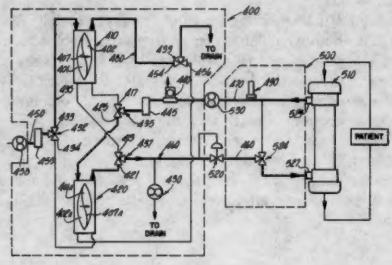
AUTOMATED DIAPHRAGM APPARATUS AND METHOD FOR CONTROLLING NEGATIVE PRESSURE HEMODIALYSIS TREATMENT

Thomas H. Papanek, Oakland, Calif.; Mark S. Egler, Boston, Mass., and Julian I. Landau, Concord, Calif., assignors to Cordis Dow Corp., Miami, Fla.

Continuation of Ser. No. 114,776, Jan. 23, 1980, abandoned. This application Oct. 31, 1980, Ser. No. 203,075

Int. Cl.³ B01D *31/00, 13/00*

U.S. Cl. 210—647 **8 Claims**



1. An automated single pass negative pressure dialysate hemodialysis treatment circuit for automatically controlling hemodialyzer and dialysate operating parameters in response to operator set ultrafiltrate withdrawal rate comprising:

a hemodialyzer separated by a semipermeable membrane into a blood side and a dialysate side having inlet and outlet ports for removing water and impurities from the blood;

a first dialysate cylinder having hydraulically driven means separating said cylinder into two chambers as said means moves between the ends of said cylinder connected to a fresh/drain circuit for filling one of said chambers via a dialysate supply line with fresh dialysate as spent dialysate is removed from the other of said chambers to drain via a drain line and alternately connected to a kidney/spent circuit for filling one of said chambers with spent dialysate via a kidney spent dialysate removal line as fresh dialysate is removed from the other of said chambers and supplied to the inlet port of said kidney via a kidney dialysate supply line;

a second dialysate cylinder having hydraulically driven means separating said cylinder into two chambers as said means moves between the ends of said cylinder connected to said kidney/spent circuit during the time said first cylinder is connected to said fresh/drain circuit and alternately connected to said fresh/drain circuit during the time said first cylinder is connected to said kidney/spent circuit;

valve switching means associated with said first and said second cylinders connecting said cylinders alternately with one of said fresh/drain and said kidney/spent circuits;

dialysate flow control means connected into said kidney spent dialysate removal line intermediate said kidney dialysate outlet port and said valve switching means for controlling the rate of spent dialysate flow in said kidney spent dialysate removal line,

a degasifier connected into said kidney spent dialysate removal line intermediate said pump and said valve switching means in said kidney/spent circuit;

ultrafiltrate removal means connected into an above atmospheric portion of said circuit intermediate said valve switching means and means in said kidney dialysate supply line and means in said spent dialysate removal line which preserve said above atmospheric pressure in said above atmospheric circuit portion, and means for setting the rate of withdrawal of ultrafiltrate from said portion of said circuit;

sensing means for sensing the end of stroke of said hydraulically driven means in each of said first and said second cylinders and for converting said sensed instant into an electrical signal;

means for causing said valve switching means to simultaneously switch all valves controlling flow into and from each of said first and said second cylinders at the instant of arrival of the end of stroke of the second of said hydraulically driven means in said first and said second cylinders for alternating the existing connection of each of said cylinders with one of said fresh/drain and said kidney/spent circuits;

detecting means operatively connected to said electrical signal of said end of stroke sensing means for detecting the time difference between the instant of each said end of stroke of each of said hydraulically driven means and for converting said time difference into a flow rate electrical signal for supply to said pump means for altering the flow rate of said spent dialysate in said kidney spent dialysate removal line,

flow rate signal generator means for supplying to said pump means said flow rate signal at the delayed instant of the end of the succeeding half cycle of traverse to the same end of stroke from which the said detected time difference first occurred for causing said pump to adjust the rate of dialysate flow in said kidney spent dialysate removal line to thereby achieve synchronization of the instant of end of stroke of each of said hydraulically driven means in said cylinders.

4,366,062

REVERSE OSMOSIS USING A COMPOSITE ISOCYANURATE MEMBRANE

Masaru Kurihara; Tetsuo Watanabe, both of Ohtsu, and Tetsuo Inoue, Shiga, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

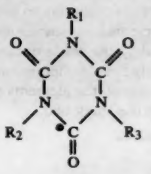
Continuation-in-part of Ser. No. 214,845, Dec. 10, 1980, which is a continuation of Ser. No. 9,431, Feb. 5, 1979, abandoned. This application Feb. 6, 1981, Ser. No. 232,112

Claims priority, application Japan, Feb. 13, 1978, 53-14046

Int. Cl.³ B01D *13/00*

U.S. Cl. 210—651 **28 Claims**

1. A method for selective separation of at least one water-soluble useful material from an aqueous solution by reverse osmosis comprising contacting the aqueous solution under pressure maintained above the osmotic pressure of said aqueous solution with a semipermeable composite membrane, wherein said semipermeable composite membrane comprises a porous substrate, and a barrier layer about 0.01 to about 0.1 micron in thickness and composed of a cross-linked polymeric material having isocyanurate structures of Formula (I) formed on said porous substrate:



(I)

wherein each of R_1, R_2 and R_3 is selected from the group consisting of hydrogen, a glycidyl group, an alkyl radical containing from 2 to 5 carbon atoms, an alkyl radical carrying a functional hydroxyl group and an alkyl radical carrying a functional glycidyl group, with the proviso that at least two of R_1, R_2 and R_3 are selected from the group consisting of glycidyl groups, alkyl groups carrying a functional hydroxyl group and alkyl groups carrying functional glycidyl groups;

said cross-linked polymeric material having linkages selected from the group consisting of ether (—O—) linkages, ester

linkages or a combination thereof connecting said isocyanurate structures to each other.

4,366,063

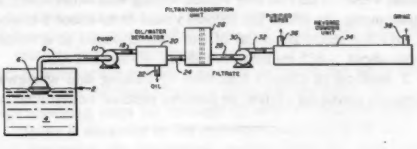
PROCESS AND APPARATUS FOR RECOVERING USABLE WATER AND OTHER MATERIALS FROM OIL FIELD MUD/WASTE PITS

Rodney J. O'Connor, College Station, Tex., assignor to Romec Environmental Research & Development, Inc., College Station, Tex.

Filed Jun. 17, 1981, Ser. No. 274,654

Int. Cl.³ C02F *1/44*

U.S. Cl. 210—652 **4 Claims**



1. A mobile apparatus for recovering useful water from mud/waste pits resulting from drilling operations which contains a mixture of water, solids, hydrocarbons and dissolved salts which consists essentially of;

a truck bed suitable for carrying apparatus from one location to another when connected to a prime mover;

an immersible filter through which the water, hydrocarbons and dissolved salts are pulled to separate them from solids in the waste pit;

conduit and a pump for transferring the water, hydrocarbons and dissolved salts to an oil and water separator means;

an oil and water separator means for forming an oil stream for removal and discharge and a water stream for subsequent processing;

a filtration and adsorption means communicating with the oil and water separator means to remove residual hydrocarbons and solid particulates which may remain in the water stream to leave a water stream containing dissolved salts;

a pump means communicating with the filtration and adsorp-

tion means through the inlet of the pump, and a reverse osmosis means through the outlet of the pump to provide operating pressure for the reverse osmosis means; and

a reverse osmosis means for separating the waste stream into a useful water stream substantially free of contaminants as a permeate and a brine stream wherein the elements of the mobile apparatus are carried by the truck bed.

4,366,064

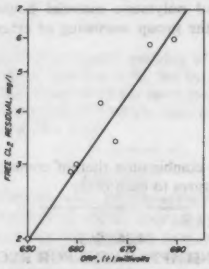
TREATMENT OF BLAST FURNACE WASTEWATER

Edward L. Mihelic, Murrysville, and Samuel B. Schlosberg, Monroeville, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 202,266, Oct. 30, 1980, abandoned. This application Nov. 5, 1981, Ser. No. 318,303

Int. Cl.³ C02F 1/76

U.S. Cl. 210—668 **5 Claims**



1. Method of treating blast furnace and other wastewater containing ammonia, cyanide and phenol by breakpoint chlorination comprising chlorinating said wastewater maintained at a pH of about 8.5 to about 10 in an initial vessel by the addition of a chlorinating compound in response to the redox potential measured in a second vessel, flowing said wastewater from said initial vessel to said second vessel, mixing said wastewater, and maintaining the pH in the second vessel from about 6 to about 8, and the redox potential of the second vessel at a value of from about +625 millivolts to about +750 millivolts.

2. Method of claim 1 followed by passing said wastewater through activated carbon to remove residual contaminants.

4,366,065

SEPARATING PARTICLES FROM A LIQUID

Colin M. Leslie, Kelsall; James H. P. Watson, St. Austell, and John A. Williams, Warrington, all of England, assignors to British Nuclear Fuels Limited, Risley, England

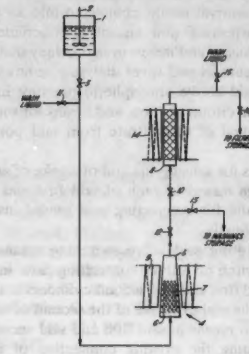
Continuation of Ser. No. 113,605, Jan. 21, 1980, abandoned. This application Nov. 20, 1981, Ser. No. 323,698

Claims priority, application United Kingdom, Feb. 2, 1979, 7903800

Int. Cl.³ C02F 1/48

U.S. Cl. 210—695 **6 Claims**

1. A method of separating particles suspended in a liquid which comprises locating electromagnet means outside a chamber containing a filter bed of individual bodies, fixedly positioning the electromagnet means relative to the bed with the bed arranged in the pole gap of the magnet and the magnet extending upwardly beyond the bed such that the magnet surrounds the bed and is offset axially relative to the bed so as to levitate the bodies upon energization of the fixedly positioned electromagnet means, passing a flow of liquid containing suspended particles through the bed with the electromagnet means de-energized so as to trap the particles in the bed, discontinuing the liquid flow, levitating the bed by energizing said fixedly positioned electromagnet means and passing a



wash liquid through the levitated bed to flush trapped particles out of the bed.

4,366,066

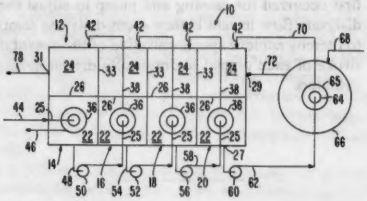
STABILIZATION OF SOFTENED WATER WITH SELF-GENERATED CO_2

Alfred N. Rogers, Pleasanton; Leon Awerbuch, and Sherman C. May, both of San Francisco, all of Calif., assignors to Bechtel International Corporation, San Francisco, Calif.

Filed Mar. 27, 1981, Ser. No. 248,648

Int. Cl.³ C02F 1/06, 1/20, 5/02

U.S. Cl. 210—696 **12 Claims**



1. Apparatus for softening hard water comprising: a structure having means defining a series of first interconnected chambers for successively receiving a flow of hard water; settler means coupled with the downstream end of such series of first chambers for heating the hard water therefrom to a temperature sufficient to cause the hard water to become softened and for separating precipitated calcium carbonate from the softened water, said structure further having means defining a series of second interconnected chambers for successively receiving a pressurized flow of softened water from said softening means, there being a second chamber for each first chamber, respectively, the second chambers defining flash chambers for the softened water, there being a fluid flow path interconnecting each second chamber with a respective first chamber to permit flashed water vapor generated in the second chamber to flow into direct, admixing contact with hard water flowing into the corresponding first chamber to thereby cause said hard water to be preheated in the first chamber by the water vapor and to evolve CO_2 as it is being preheated in the first chamber; and means coupled with at least one of the first chambers for directing the CO_2 evolved therein into a predetermined second chamber for admixture with the softened water therein to stabilize the softened water wherein said predetermined second chamber includes the next downstream

second chamber with reference to the direction of flow of softened water through the second chambers.

10. A method of treating hard water containing calcium comprising: directing a continuous flow of hard water along a first path; progressively heating said hard water as it flows along said first path; urging said heated hard water through a region at which the hard water is further heated to a temperature sufficient to soften the water and precipitated calcium carbonate is separated from the softened water, said urging step being performed after the hard water has moved along said first path, whereby the heated hard water becomes softened water; directing the softened water along a second path; progressively lowering the pressure of the softened water as it flows along said second path to cause a portion of the softened water to flash into a vapor, said heating step including directing the flashed vapor into direct, admixing contact with the hard water flowing along the first path to heat the hard water in the first path and to evolve CO_2 therein; and directing the evolved CO_2 from said first path into the second path to stabilize the softened water in the second path to thereby maintain calcium in the softened water in soluble form wherein the first path is formed from a number of first, interconnected chambers and said second path is formed from a number of second, interconnected chamber, there being a second chamber for each first chamber, said CO_2 is evolved in each of at least certain of the first chambers and is directed into the next adjacent downstream second chambers.

4,366,067

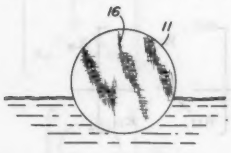
METHOD AND APPARATUS FOR REMOVAL AND RECOVERY OF OIL

Gordon R. Golding, 1 Oak Ave., Browns Mills, N.J. 08015, and Richard J. Boaggio, 1404 Spruce Ave., Kirkwood, N.J. 08043

Filed Oct. 20, 1980, Ser. No. 198,762

Int. Cl.³ C02F *1/28*

U.S. Cl. 210—671 **8 Claims**



6. Method of cleaning up oil spills comprising applying bags or booms containing polyisocyanurate foam dust to the spill and recovering the bags or booms after adsorbing oil, said polyisocyanurate foam being formed from a polyol and a large molar excess of polymeric isocyanate so that trimerization to the isocyanurate ring structure takes place.

4,366,068

FILTER AND METHOD OF MAKING SAME

Eugene A. Ostreicher, Farmington, and Kenneth C. Hou, Glastonbury, both of Conn., assignors to AMF Incorporated, White Plains, N.Y.

Division of Ser. No. 147,975, May 8, 1980, Pat. No. 4,305,782, which is a continuation-in-part of Ser. No. 27,568, Apr. 6, 1979, abandoned, which is a continuation-in-part of Ser. No. 666,815, Mar. 15, 1976, abandoned. This application Jun. 23, 1981, Ser. No. 276,584

Int. Cl.³ B01D *39/00*

U.S. Cl. 210—767 **11 Claims**

1. A method for the removal of submicron contaminants from biological liquid comprising passing the contaminated liquid through a filter media sheet consisting essentially of fine particulate and self-bonding matrix of cellulose fiber, the surfaces of at least one of which are modified with a sufficient amount of an inorganic cationic colloidal silica to provide a positive zeta potential to the surface of the filter media sheet, wherein the cationic colloidal silica is derived from a dispersion of positively charged colloidal particles having a dense silica core modified with a polyvalent metal-oxygen compound wherein the polyvalent metal is aluminum, and a sufficient amount of the compound is provided to coat the silica to a level of at least 13% by weight of colloidal solids.

4,366,069

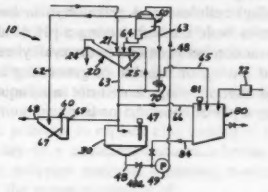
COOLANT RECOVERY SYSTEM

Denis J. Dudrey, Bloomington; John T. Herman, Mahtomedi; Girma Wolde-Michael, Little Canada, and Delmer L. Radeztsky, Bloomington, all of Minn., assignors to Donaldson Company, Inc., Minneapolis, Minn.

Filed Apr. 16, 1981, Ser. No. 254,751

Int. Cl.³ C02F *1/40*

U.S. Cl. 210—788 **18 Claims**



1. A process for recovering an industrial coolant fluid from a contaminated mixture, the mixture containing the coolant fluid, contaminating oils and solid particulate matter, comprising the steps of:

(a) removing relatively large and heavy particulate matter from the contaminated mixture;

(b) depositing the partially cleaned mixture from which particulate matter has been removed into a container having a fluid outlet in the lower portion thereof;

(c) imparting a vortex flow to the fluid in the container so that free oil which has risen from the mixture and is carried on the surface is drawn down to the outlet of the container;

(d) transferring mixture and free surface oil from the outlet container to a centrifugal separator;

(e) separating coolant fluid, free oil, and solids from the mixture in the centrifugal separator;

(f) reintroducing at least a portion of the separated coolant fluid into the fluid vortex within the container;

(g) repeating steps (d) through (f) until a sufficient level of clarity is obtained in the recovered coolant fluid; and

(h) removing the recovered coolant fluid for subsequent reuse.

4,366,070

VISCOSIFIER & FLUID LOSS CONTROL SYSTEM

Jacob Block, Rockville, Md., assignor to W. R. Grace & Co., New York, N.Y.

Continuation-in-part of Ser. No. 144,366, Apr. 28, 1980, abandoned. This application Feb. 27, 1981, Ser. No. 239,072

The portion of the term of this patent subsequent to Dec. 23, 1997, has been disclaimed.

Int. Cl.³ C09K *7/02*

U.S. Cl. 252—8.5 A **13 Claims**

1. A composition capable of imparting to aqueous systems a combination of pseudoplasticity and fluid loss control comprising a mixture of:

(a) a hydroxy containing aluminum component formed by mixing in an aqueous medium and under a high degree of agitation a water-soluble basic agent selected from the group consisting of an alkali metal aluminate, alkali metal hydroxide, ammonium hydroxide and mixtures thereof with a water-soluble acidic agent selected from an inor-

ganic acid, aluminum chloride, aluminum sulfate, aluminum nitrate, their hydrates and mixtures thereof; at least one of said basic and acidic agents being an aluminum containing compound: said acidic and basic agents being reacted in a ratio such that the resultant product is capable of imparting to an aqueous medium a pH of from at least about 8 to about 10.3 in combination with

(b) a cross-linked hydroxyalkyl cellulose reaction product, said reaction product formed by contacting in an aqueous medium a hydroxy C_1-C_3 alkyl cellulose and from about 1 to 200 percent of stoichiometry based on the hydroxy groups of the cellulose of an agent capable of cross-linking said cellulose, said agent being epihalohydrin or said agent being a compound having at least one aldehyde group therein or a compound capable of generating an aldehyde group in situ;

wherein the amount of component (a) to component (b) is in the ratio of at least about 0.75:1 to 3:1; the reaction between said hydroxyalkyl cellulose and epihalohydrin being carried out in an aqueous basic medium having a pH of about 9.5 or more and the reaction between said hydroxyalkyl cellulose and said compound having or capable of generating at least one aldehyde group therein being carried out in an aqueous acidic medium having a pH of about 5.5 or less.

4,366,071

OIL WELL TREATING METHOD AND COMPOSITION

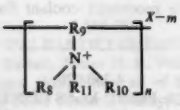
Homer C. McLaughlin, and Jimmie D. Weaver, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Continuation of Ser. No. 901,664, May 4, 1978, which is a continuation-in-part of Ser. No. 714,213, Aug. 13, 1976, abandoned. This application Feb. 4, 1980, Ser. No. 118,022

Int. Cl.³ E21B *43/12, 43/25, 43/27*

U.S. Cl. 252—8.55 R **7 Claims**

1. A method of treating a clay-containing earth formation for the purpose of preventing or at least reducing the swelling, migration and/or dispersion of said clay to thereby stabilize said formation, said method being comprised of contacting said clay in said formation with an effective amount of an organic polycationic polymer dispersed or dissolved in a carrier fluid, said contacting being for a time sufficient for said organic polycationic polymer to replace clay cations to thereby transform said clay to a more stable form wherein said organic polycationic polymer contains repeating monomer units defined by the structural formula



wherein:

R_8, R_{10} and R_{11} can be the same or different and are selected from alkyl and alkenyl groups containing 1 to 6 carbon atoms, and R_9 is a divalent organic aliphatic hydrocarbon group containing 2 to 40 carbon atoms;

X is an anion selected from halides, nitrate, sulfate, methosulfate, bisulfate and carbonate;

n is an integer equal to the number of monomer units in said polymer required to produce a molecular weight in the range of from about 800 to 3,000,000; and

m is an integer equal to the number of said anions required to maintain electronic neutrality;

and further wherein the ratio of the total number of nitrogen atoms in said polymer to the total number of carbon atoms in said polymer is in the range of from about 1 to 2 to about 1 to 36.

4,366,072

OIL WELL TREATING METHOD AND COMPOSITION

Homer C. McLaughlin, and Jimmie D. Weaver, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

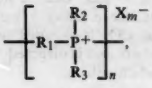
Continuation of Ser. No. 901,664, May 4, 1978, which is a continuation-in-part of Ser. No. 714,213, Aug. 13, 1976, abandoned. This application Feb. 4, 1980, Ser. No. 118,055

Int. Cl.³ E21B *43/12*

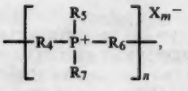
U.S. Cl. 252—8.55 R **12 Claims**

1. A method of treating a clay-containing earth formation for the purpose of preventing or at least reducing the swelling, migration and/or dispersion of said clay to thereby stabilize said formation, said method being comprised of contacting said clay in said formation with an effective amount of an organic polycationic polymer dispersed or dissolved in a carrier fluid, said contacting being for a time sufficient for said organic polycationic polymer to replace clay cations to thereby transform said clay to a more stable form wherein said organic polycationic polymer contains repeating monomer units selected from the group consisting of:

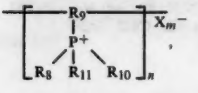
(a)



(b)

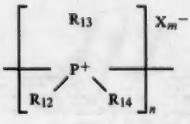


(c)



and

(d)



wherein

R_1 is a divalent normal or branched chain alkylene group containing 2 to 40 carbon atoms, R_2 and R_3 can be the same or different and are normal or branched chain alkyl groups containing 1 to 6 carbon atoms;

R_4 and R_6 can be the same or different and are selected from divalent organic aliphatic groups containing 2 to 40 carbon atoms, R_5 and R_7 can be the same or different and are selected from monovalent organic aliphatic groups containing 1 to 6 carbon atoms;

R_8, R_{10} and R_{11} can be the same or different and are selected from monovalent alkyl alkenyl and aryl groups containing 1 to 6 carbon atoms, R_9 is a divalent organic aliphatic group containing 2 to 40 carbon atoms;

R_{13} is a divalent organic aliphatic group containing 2 to 40 carbon atoms which together with the phosphorous atom in the monomer unit forms a heterocyclic ring,

R_{12} and R_{14} can be the same or different and are selected from monovalent organic aliphatic groups containing 1 to 6 carbon atoms;

X is an anion selected from halides, nitrate, sulfate, methosulfate, bisulfate and carbonate;

n is an integer equal to the number of monomer units in said polymer required to produce a molecular weight in the range of from about 1,000 to 3,000,000; and

m is an integer equal to the number of said anions required to maintain electrical neutrality;

and further wherein the ratio of the total number of said phos-

phorous atoms in said polymer to the total number of carbon atoms in said polymer is in the range of about 1 to 2 to about 1 to 36.

4,366,073

OIL WELL TREATING METHOD AND COMPOSITION

Homer C. McLaughlin, and Jimmie D. Weaver, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

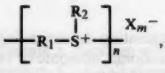
Continuation of Ser. No. 901,664, May 4, 1978, which is a continuation-in-part of Ser. No. 714,213, Aug. 13, 1976, abandoned. This application Feb. 4, 1980, Ser. No. 118,056

Int. Cl.³ E21B *43/12*

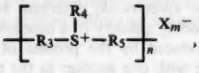
U.S. Cl. 252—8.55 R 13 Claims

1. A method of treating a clay-containing earth formation for the purpose of preventing or at least reducing the swelling, migration and/or dispersion of said clay to thereby stabilize said formation, said method being comprised of contacting said clay in said formation with an effective amount of an organic polycationic polymer dispersed or dissolved in a carrier fluid, said contacting being for a time sufficient for said organic polycationic polymer to replace clay cations to thereby transform said clay to a more stable form wherein said organic polycationic polymer contains repeating monomer units selected from the group consisting of:

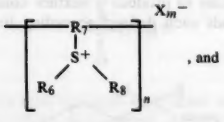
(a)



(b)

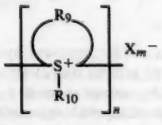


(c)



, and

(d)



wherein

R_1 is a divalent normal or branched chain alkylene group containing 2 to 40 carbon atoms, R_2 is a normal or branched chain alkyl group containing 1 to 6 carbon atoms;

R_3 and R_5 can be the same or different and are selected from divalent organic aliphatic groups containing 2 to 40 carbon atoms, R_4 is selected from monovalent aliphatic groups containing 1 to 6 carbon atoms;

R_6 and R_8 can be the same or different and are selected from monovalent alkyl, alkenyl and aryl groups containing 1 to 6 carbon atoms, R_7 is a divalent organic aliphatic group containing 2 to 40 carbon atoms;

R_9 is a divalent organic aliphatic group containing 2 to 40 carbon atoms which together with the sulfur atom in the monomer unit form a heterocyclic ring,

R_{10} is selected from monovalent organic aliphatic groups containing 1 to 6 carbon atoms;

X is an anion selected from halides, nitrate, sulfate, methosulfate, bisulfate and carbonate;

n is an integer equal to the number of monomer units in said polymer required to produce a molecular weight in the range of from about 1,000 to 3,000,000; and

m is an integer equal to the number of said anions required to maintain electrical neutrality;

and further wherein the ratio of the total number of said sulfur atoms in said polymer to the total number of carbon atoms in said polymer is in the range of about 1 to 2 to about 1 to 36.

4,366,074

OIL WELL TREATING METHOD AND COMPOSITION

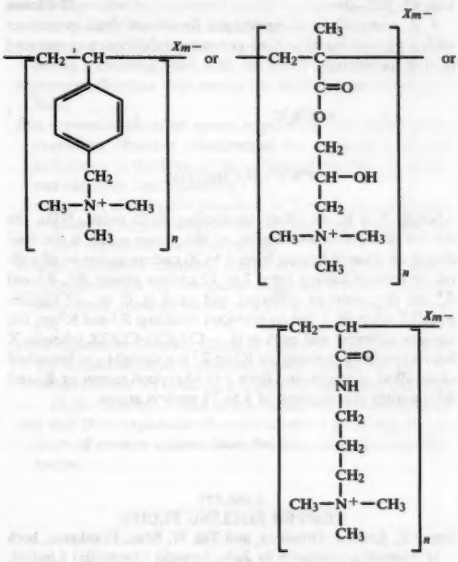
Homer C. McLaughlin, and Jimmie D. Weaver, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Continuation of Ser. No. 901,664, May 4, 1978, which is a continuation-in-part of Ser. No. 714,213, Aug. 13, 1976, abandoned. This application Feb. 4, 1980, Ser. No. 118,369

Int. Cl.³ E21B *43/12, 43/25*

U.S. Cl. 252—8.55 R 5 Claims

1. A method of treating a clay-containing earth formation for the purpose of preventing or at least reducing the swelling, migration and/or dispersion of said clay to thereby stabilize said formation, said method being comprised of contacting said clay in said formation with an effective amount of an organic polycationic polymer dispersed or dissolved in a carrier fluid, said contacting being for a time sufficient for said organic polycationic polymer to replace clay cations to thereby transform said clay to a more stable form wherein said organic polycationic polymer contains repeating monomer units selected from the group consisting of:



wherein:

X is an anion selected from halides, nitrate, sulfate, methosulfate, bisulfate, and carbonate;

n is an integer equal to the number of monomer units in said polymer required to produce a molecular weight in the range of from about 800 to 3,000,000; and

m is an integer equal to the number of said anions required to maintain electronic neutrality

and further wherein the ratio of the total number of nitrogen atoms in said polymer to the total number of carbon atoms in said polymer is in the range of from about 1 to 2 to about 1 to 36.

4,366,075

COMPOSITION FOR FILLING CABLES

Shirley Beach, Vancouver, Canada, assignor to Phillips Cables Limited, Brockville, Canada

Division of Ser. No. 676,991, Apr. 14, 1976, Pat. No. 4,110,137, which is a continuation-in-part of Ser. No. 428,757, Dec. 27, 1973, Pat. No. 3,961,128. This application Apr. 24, 1978, Ser. No. 899,704

Claims priority, application Canada, Dec. 29, 1972, 160290; Nov. 14, 1975, 239681

Int. Cl.³ C10M *5/04*

U.S. Cl. 252—28 10 Claims

1. A composition for filling communication cables consisting essentially of 99% to 94%, by weight, of petroleum jelly and 1% to 6%, by weight, of siliceous material, in an amount effective to render the petroleum jelly viscous at elevated temperatures, the siliceous material being substantially uniformly distributed throughout the petroleum jelly.

4,366,076

CORROSION INHIBITED COMPOSITIONS

David R. Clark, Sale, England, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

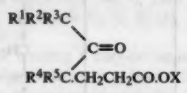
Filed May 28, 1981, Ser. No. 267,309

Claims priority, application United Kingdom, Jun. 11, 1980, 8019126

Int. Cl.³ C10M *1/20, 1/32, 3/04*

U.S. Cl. 252—34 22 Claims

1. A composition comprising a functional fluid in contact with a ferrous metal and, as corrosion inhibitor, a compound having the formula:



I

wherein X is H, an alkali- or alkaline earth metal, NH_4, the residue of a protonated amine, or the group —OX is the residue of an alkanol having from 1 to 20 carbon atoms or of a di- tri- or tetra-ol having from 2 to 12 carbon atoms; R^1, R^2 and R^4 are the same or different and each is H or $—CH_2CH_2COOX$ wherein X has its previous meaning; R^3 and R^5 are the same or different and each is H, $—CH_2CH_2COOX$ wherein X has its previous meaning, or R^3 or R^5 is a straight - or branched chain alkyl group having from 3 to 16 carbon atoms; or R^3 and R^5 together are alkylene of 5 to 15 carbon atoms.

4,366,077

TEMPER ROLLING FLUIDS

Barry E. Andrew, Dromana, and Tak W. Mak, Frankston, both of Australia, assignors to John Lysaght (Australia) Limited, New South Wales, Australia

PCT No. PCT/AU80/00055, § 371 Date Apr. 29, 1981, § 102(e) Date Apr. 20, 1981, PCT Pub. No. WO81/00579, PCT Pub. Date Mar. 5, 1981

PCT Filed Aug. 28, 1980, Ser. No. 253,836

Int. Cl.³ C10M *1/06*

U.S. Cl. 252—49.3 23 Claims

1. A composition for application to a metal surface and characterized in that said composition comprises:

an inorganic nitrite

a benzoate, and

a carbonate

dissolved in aqueous solution.

4,366,078

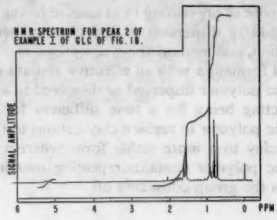
PROCESS FOR AUGMENTING OR ENHANCING THE AROMA OF DETERGENTS USING DIMERIZED ISOAMYLENE COMPOSITION

Richard M. Boden, Monmouth Beach; Lambert Dekker, Wyckoff; Frederick L. Schmitt, Holmdel, all of N.J., and Augustinus G. Van Loveren, Rye, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

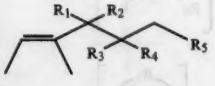
Division of Ser. No. 188,576, Sep. 18, 1980, Pat. No. 4,303,555, which is a continuation-in-part of Ser. No. 160,788, Jun. 19, 1980, Pat. No. 4,287,084. This application May 28, 1981, Ser. No. 267,899

Int. Cl.³ C11D *3/50*

U.S. Cl. 252—174.11 1 Claim



1. A process for augmenting or enhancing the aroma of a solid or liquid anionic, cationic, nonionic or zwitterionic detergent comprising the step of adding to a solid or liquid anionic, cationic, nonionic or zwitterionic detergent base, an aroma augmenting or enhancing quantity of a diisoamylene-containing composition produced by the process of reacting two moles of isoamylene with one another in the presence of an acid catalyst in order to produce a mixture consisting essentially of compounds each defined according to the generic structure:



wherein R_1, R_2, R_3, R_4 and R_5 represent hydrogen or methyl with the provisos that (i) at least one of R_3 and R_4 represents methyl; (ii) the sum of the carbon atoms in R_1, R_2, R_3, R_4, and R_5 is three; and (iii) R_1 and R_2 each represent hydrogen when R_5 is methyl.

4,366,079

SULFONATED RUBRENE AND AQUEOUS CHEMILUMINESCENT COMPOSITIONS CONTAINING THE SAME

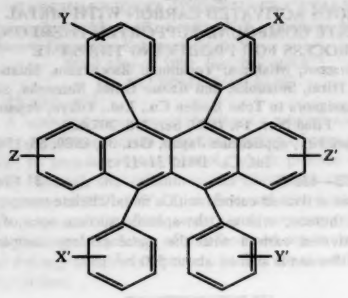
Michael M. Rauhut, Bridgewater, and Arthur G. Mohan, Somerville, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Feb. 26, 1981, Ser. No. 238,340

Int. Cl.³ C09K *11/06, 11/14*

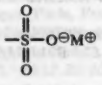
U.S. Cl. 252—188.3 CL 12 Claims

1. A sulfonated rubrene represented by the formula (I):

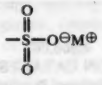


(I)

wherein each of the X, Y, Z, X', Y', and Z' substituents independently represents a member selected from the group consisting of hydrogen, C_1–C_6 alkyl, chloro, fluoro, carboxy, C_1–C_6 alkoxy, hydroxy, C_6–C_{12} aryloxy, and



wherein $M^{\oplus}$ represents a member selected from the group consisting of ammonium, C_1–C_6 alkylammonium, C_1–C_6 dialkylammonium, C_1–C_6 trialkylammonium, and alkali metal ions, and wherein the defined sulfonated rubrene contains the substituent



in an amount at least sufficient to produce water-solubility of the sulfonated rubrene to the extent of 1×10^{-4} moles per liter at ambient temperature.

4,366,080

LIQUID CRYSTAL DISPLAY ELEMENT

Kiyoshi Mizunoya; Shoichi Matsumoto, both of Yokohama; Hitoshi Tomii, Kawasaki; Masahiro Kawamoto, Yokohama, and Yuusuke Wada, Chigasaki, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 9, 1981, Ser. No. 242,030

Claims priority, application Japan, Apr. 7, 1980, 55/44683; Jan. 16, 1981, 56/3873

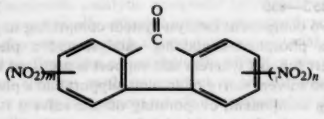
Int. Cl.³ G02F *1/13;* C09K *3/34*

U.S. Cl. 252—299.3 **15 Claims**

1. A dynamic scattering type liquid crystal display element adapted to be actuated by D.C. voltage, comprising:

a pair of electrode substrates forming a space therebetween, at least one of which is transparent;

a liquid crystal composition filled in said space, said composition comprising a liquid crystal, and a charge transfer complex formed of an electron acceptor and electron donor, said electron acceptor being at least one nitro-substituted 9-fluorenone expressed by the general formula



where m and n are each an integer of 0 to 4, and m plus n are an integer of 1 to 4.

4,366,081

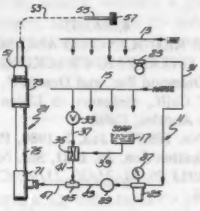
MIXING APPARATUS FOR FOAM GENERATION

Donald A. Hull, 6660 Woodman Ave., #105, Van Nuys, Calif. 91405

Filed May 9, 1980, Ser. No. 148,563

Int. Cl.³ B01F *3/04, 5/06, 13/06*

U.S. Cl. 252—359 E **18 Claims**



1. Apparatus for generating a foam comprising:

air inlet means;

means operatively connected to the air inlet means for combining a liquid with air passed therethrough;

means operatively connected to the air inlet means for combining a cleaning fluid with the liquid and the air;

expansion chamber inlet means for receiving the combined fluid;

first expansion chamber means operatively connected to the expansion chamber inlet means for creating a mixing turbulence in the flow of the combined fluid of air, liquid, and cleaning fluid including

means for altering the direction of flow of the combined fluids by approximately 90° as they flow through the first expansion chamber means;

second expansion chamber means comprising flow means through which the combined fluids flow away from the turbulence creating means in a relatively quiescent flow; and

third expansion chamber means in fluid communication with the second expansion chamber means and including

means therein for creating a mixing turbulence in the flow of the combined fluid of air, liquid, and cleaning fluid,

and said third expansion chamber means is so configured as to be of greater volume than the first expansion chamber means.

4,366,082

ISOFLAVONES AND RELATED COMPOUNDS, METHODS OF PREPARING AND USING AND ANTIOXIDANT COMPOSITIONS CONTAINING SAME

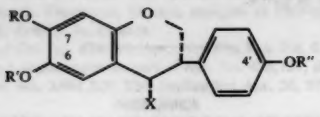
Fritz W. Zilliken, Remagen, Fed. Rep. of Germany, assignor to Z-L Limited Partnership, Janesville, Wis.

Division of Ser. No. 29,122, Apr. 11, 1979, Pat. No. 4,264,509, which is a continuation-in-part of Ser. No. 804,594, Jun. 8, 1977, Pat. No. 4,157,984. This application Jan. 12, 1981, Ser. No. 223,941

Int. Cl.³ C07D *311/36, 311/58*

U.S. Cl. 252—404 **21 Claims**

1. An antioxidant composition comprising a compound having the structure:



wherein the dashed lines represent a carbon-carbon single bond or a carbon-carbon double bond, and wherein X may be two hydrogen atoms or oxygen, and further wherein each of R, R' and R" may be methyl or ethyl group or hydrogen, and a suitable carrier.

4,366,083

PROCESS FOR REDUCING CO AND SO_x EMISSIONS FROM CATALYTIC CRACKING UNITS

Kenneth Baron, Diamond Bar, and Dennis P. McArthur, Yorba Linda, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Division of Ser. No. 109,756, Jan. 7, 1980, Pat. No. 4,311,581. This application Jan. 26, 1981, Ser. No. 228,267

Int. Cl.³ B01J *29/38, 21/20, 23/92;* C10G *11/08*

U.S. Cl. 252—416 **17 Claims**

1. In a process for regenerating cracking catalyst particles having sulfur-containing coke on the surfaces thereof by combusting said coke in the presence of oxygen and at elevated temperatures so as to remove sufficient coke from the surfaces of said catalyst particles so as to reactivate said catalyst particles for cracking hydrocarbons while producing a flue gas containing one or more pollutant gases selected from the group consisting of SO_x and CO, the improvement for reducing the amount of at least one of said pollutant gases carried with said flue gas comprising:

(1) introducing into a regeneration zone a feed admixture of catalyst particles deactivated with coke and bastnaesite particles containing natural bastnaesite or a treated natural bastnaesite containing a rare earth fluorocarbonate or rare earth oxyfluoride after use of said admixture in a catalytic cracking reaction zone wherein hydrocarbons are cracked to produce product hydrocarbons of lower average molecular weight and boiling point;

(2) combusting, in said regeneration zone, a substantial proportion of the coke on said catalyst particles admixed with said bastnaesite particles; and

(3) withdrawing a product admixture of bastnaesite particles and regenerated cracking catalyst particles from said regeneration zone, said product admixture being more active for cracking hydrocarbons than said feed admixture.

2. A process as defined in claim 1 wherein the temperature in said regeneration zone is between about 900° and 1400° F.

3. A process as defined in claim 1 wherein (1) said catalyst particles comprise a crystalline aluminosilicate zeolite having activity for cracking hydrocarbons at a temperature above about 750° F. and (2) said bastnaesite is in the form of particles having an average diameter between about 20 to 80 microns.

4,366,084

CATALYST FOR MAKING POLYURETHANES

Francis W. Arbir, Itasca; Daniel S. Raden, Hawthorn Woods, and Kenneth W. Narducy, Bloomingdale, all of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed May 26, 1981, Ser. No. 267,150

Int. Cl.³ B01J *31/02*

U.S. Cl. 252—426 **4 Claims**

1. A catalyst composition for preparing urethane foams consisting essentially of 3-dimethylaminopropylamine and 10–50 equivalent-% of phenol.

4,366,085

FIBROUS ACTIVATED CARBON WITH METAL CHELATE COMPOUND SUPPORTED THEREON, PROCESS FOR PRODUCING THE SAME

Shigeru Ikegami, Mishima; Yoshihumi Kawakatsu, Shizuoka; Minoru Hirai, Shizuoka, and Kazuo Izumi, Shizuoka, all of Japan, assignors to Toho Beslon Co., Ltd., Tokyo, Japan

Filed Nov. 14, 1980, Ser. No. 207,039

Claims priority, application Japan, Oct. 30, 1980, 55/151487

Int. Cl.³ B01J *31/12*

U.S. Cl. 252—431 C **31 Claims**

1. Fibrous activated carbon with a metal chelate compound supported thereon, wherein the specific surface area of the fibrous activated carbon with the metal chelate compound supported thereon is at least about 500 m^2/g.

4,366,086

COMPOSITION CONTAINING CHLORINE, BROMINE AND MAGNESIUM

David L. Beach, Gibsonia, Pa., and Adolfo Zambelli, Milan, Italy, assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Dec. 29, 1980, Ser. No. 221,064

Int. Cl.³ B01J *31/12*

U.S. Cl. 252—431 R **60 Claims**

1. A novel composition suitable for use as a catalyst support containing chlorine, bromine and magnesium wherein the molar ratio of bromine to chlorine ranges between about 1:99 to about 50:50 obtained by reacting an organo magnesium compound with a mixture of chlorinated and brominated aluminum compounds.

4,366,087

OLIGOMERIZATION CATALYST AND PROCESS

Dominique Le Pennec, Trappes; Dominique Commereuc, Meudon, and Yves Chauvin, Le Pecq, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Continuation-in-part of Ser. No. 183,792, Sep. 3, 1980, Pat. No. 4,316,851. This application Mar. 27, 1981, Ser. No. 248,582

Claims priority, application France, Sep. 3, 1979, 79 22153

Int. Cl.³ B01J *31/14*

U.S. Cl. 252—431 C **10 Claims**

1. A catalyst composition consisting essentially of at least one hydrocarbyl aluminum halide and at least one nickel compound having the formula $(R_1COO)\ (R_2COO)Ni$, wherein R_1 is a hydroxy-substituted or unsubstituted $C_{5\text{-}20}$ hydrocarbyl radical; and R_2 is a haloalkyl group having the formula $C_mH_pX_q$, wherein m is 1,2 or 3; p is zero or an integer; q is an integer; and $p+q=2m+1$; the molar ratio of the hydrocarbyl aluminum halide to the nickel compound being from 1:1 to 50:1.

4,366,088

SUPPORT FOR A PHOSPHATE-CONTAINING CATALYST

Chelliah Daniel, Columbus, Ohio, assignor to Ashland Oil, Inc., Ashland, Ky.

Filed Jan. 26, 1981, Ser. No. 228,304

Int. Cl.³ B01J *27/14*

U.S. Cl. 252—435 **7 Claims**

1. A two component catalyst system comprising in physical mixture a phosphate-containing catalyst and a phosphate-doped inert support wherein said support is prepared by forming a liquid solvent slurry of an inert support and a phosphate-containing component, evaporating off the solvent to form a dried mass and calcining this dried mass.

4,366,089

CALCIUM-NICKEL PHOSPHATE CATALYST

Herman O. Krabbenhoft, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed May 6, 1981, Ser. No. 260,873
Int. Cl.³ B01J *27/14, 31/02*
U.S. Cl. 252—437 6 Claims

1. A method for improving the life of a calcium-nickel phosphate catalyst used in the dehydrogenation of para-isopropylphenol to para-isopropenylphenol, which process comprises passing through the calcium-nickel phosphate catalyst at a temperature of 550°–650° C., air first and then both air and a feed composed of phenol, water, and para-isopropylphenol, discontinuing the passage of this feed and continuing passage of air through the catalyst prior to its first use as a dehydrogenation catalyst.

4,366,090

PROCESS FOR THE PREPARATION OF ADSORBENT MATERIALS

Jean-Claude Caries, Manosque, France, assignor to Co.amissariat a l'Energie Atomique, Paris, France

Filed Mar. 24, 1981, Ser. No. 247,201
Claims priority, application France, Apr. 2, 1980, 80 07460
Int. Cl.³ B01J *20/10, 20/32*
U.S. Cl. 252—459 11 Claims

1. A process for the preparation of an adsorbent material, comprising

(a) an aqueous solution of an alkali metal silicate and a compound selected from the group comprising alkali metal hydroxides and ammonia,

(b) admixing the solution with an adsorbent substance selected from the group consisting of the oxides and hydroxides of iron, manganese, titanium and zirconium in the form of a powder or gel; and

(c) subjecting the thus obtained mixture to a heat treatment.

4. The process as in claim 1, wherein the heat treatment is performed in at least two stages at different temperatures, involving at least a first stage at a temperature below 100° and a second stage at a temperature of 100° to 400° C.

7. A material which can be used in the treatment or analysis of liquids comprising of an inert mineral salt of alkali metal silicate support, a hydroxide of the same alkali metal and an adsorbent substance selected from the group consisting of the oxides and hydroxides of iron, manganese, titanium and zirconium incorporated in said support.

4,366,091

HYDROCARBON DEHYDROGENATION WITH AN ATTENUATED SUPERACTIVE MULTIMETALLIC CATALYTIC COMPOSITE FOR USE THEREIN

George J. Antos, Bartlett, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 68,278, Aug. 20, 1979, Pat. No. 4,256,566, which is a continuation-in-part of Ser. No. 833,332, Sep. 14, 1977, Pat. No. 4,165,276. This application Dec. 12, 1980, Ser. No. 215,994
The portion of the term of this patent subsequent to Jan. 26, 1999, has been disclaimed.
Int. Cl.³ B01J *23/64*
U.S. Cl. 252—466 PT 13 Claims

1. A nonacidic catalytic composite comprising a combination of a catalytically effective amount of a pyrolyzed rhenium carbonyl component with a porous carrier material containing a uniform dispersion of catalytically effective amounts of an alkali or alkaline earth component, a tin component and a platinum group component which is maintained in the elemental metallic state.

4,366,092

PROCESS FOR MAKING A SILVER-GOLD ALLOY CATALYST FOR OXIDIZING ETHYLENE TO ETHYLENE OXIDE

Richard C. Winterton, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jul. 31, 1981, Ser. No. 288,969
Int. Cl.³ B01J *23/50, 23/52*
U.S. Cl. 252—476 5 Claims

1. A process for the preparation of a gold-silver alloy containing catalyst which comprises (1) impregnating a suitable inert support with a gold salt, (2) reducing said salt to gold metal by heating, (3) cooling said gold containing support, (4) washing said gold containing support with water, (5) impregnating said support with a silver salt, (6) reducing said silver salt to silver metal by heating whereby a gold-silver alloy is formed on said support, and wherein the gold and silver salts are each impregnated by contacting said support with an aqueous solution or dispersion of said metal salts.

4,366,093

CYLINDRICAL MOLDED CATALYST

Ken Shiozaki, Hyogo; Kazunori Tsuge, Takasago, and Akira Ohnishi, Kakogawa, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Mar. 31, 1981, Ser. No. 249,507
Claims priority, application Japan, Apr. 7, 1980, 55-45925
Int. Cl.³ B01J *35/02*
U.S. Cl. 252—477 R 3 Claims

1. A molded catalyst having a cylindrical shape, the outer diameter of the circle being from 3 to 6 mm., the inner diameter of the circle being at least 1.0 mm., the thickness of the wall being at most 1.5 mm. and the height being from 3 to 6 mm.

4,366,094

CONDUCTOR COMPOSITIONS

William R. Bushey, Lewiston, N.Y., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 2, 1981, Ser. No. 230,385
Int. Cl.³ H01B *1/02*
U.S. Cl. 252—512 12 Claims

1. Conductive powder composition comprising an admixture of finely divided particles of (a) 1.65–25% by wt. silicon dispersed in a matrix of 98.35–75% by wt. aluminum metal and (b) glass, having a softening point below 600° C., the weight ratio of metal to glass being from 2 to 40.

4,366,095

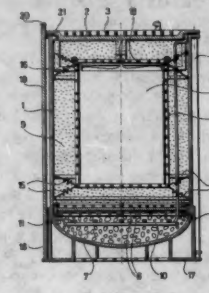
PROCESS AND EQUIPMENT FOR THE TRANSPORTATION AND STORAGE OF RADIOACTIVE AND/OR OTHER DANGEROUS MATERIALS

Ferenc Takats; Ferenc Lorand; Imre Pajer, and Laszlo Liptak, all of Budapest, Hungary, assignors to Eroterv Eromu es Halozattervezo Vallalat, Budapest, Hungary

Filed Aug. 15, 1980, Ser. No. 178,351
Claims priority, application Hungary, Sep. 14, 1979, EO 361
Int. Cl.³ A45C *11/20*
U.S. Cl. 252—633 13 Claims

1. Process for the transportation and/or storage of radioactive and/or other dangerous materials, characterized by ar-

ranging the radioactive object(s) 8 in a container 1 filled with granular material 9, where the loading of the radioactive ob-



ject(s) into the container or their removal are facilitated with fluidization of the granular material.

4,366,096

CELLULOSIC UREA FORMALDEHYDE COMPOSITIONS

Carl C. Abrams, deceased, late of Fair Lawn, N.J.; Bernice Abrams, administratrix, 15-30 Pollitt Dr. #2B, Fair Lawn, N.J. 07410, and James R. Jones, 345 N. West End Ave., Lancaster, Pa. 17603

Continuation-in-part of Ser. No. 775,191, Mar. 7, 1977, abandoned. This application Aug. 14, 1978, Ser. No. 933,431

Int. Cl.³ C08G *12/12;* C08L *1/02*

U.S. Cl. 525—498 11 Claims

1. A cellulosic material composition comprising the reaction of:

(1) a solution of a urea/metal compound at a pH of from 0.6 to 3.5 wherein the metal compound is the halide, nitrate, sulfate or phosphate of Ti, Hf, Zr, Al, Ca, Fe, Mn, Mg and mixtures thereof at a mole ratio of urea to metal compound of 6:1 to 30:1;

(2) an aqueous formaldehyde solution at an equivalent ratio of 1:05 to 1:5 of urea to formaldehyde; and having a mole ratio of total water to total urea of 2 to 15; and

(3) a cellulosic material in a ratio of 20:1 to 1:1 on a dry weight basis to the total weight of (1) and (2): under pressure.

4,366,097

NOVEL PROTEIN ISOLATION PROCEDURE

Jacquelyn J. Cameron, Harwood, and Chester D. Myers, Ajax, both of Canada, assignors to General Foods, Inc., Toronto, Canada

Filed Mar. 16, 1981, Ser. No. 244,248

Int. Cl.³ A23J *1/14*

U.S. Cl. 260—123.5 7 Claims

1. A method of forming a protein isolate, which comprises:

contacting a plant protein source material selected from the group consisting of rapeseed(canola), sesame, pea and cottonseed solely with water to extract protein from the source material and form a protein solution, and

diluting the protein solution with water to precipitate the protein therefrom.

4,366,098

PROCESS FOR PREPARING AMINOPENICILLINS

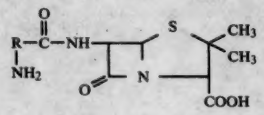
Reinhold H. W. Bender, Kennett Square, Pa., assignor to American Home Products Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 210,495, Nov. 26, 1980, abandoned, which is a continuation of Ser. No. 67,632, Aug. 17, 1979, abandoned. This application Aug. 31, 1981, Ser. No. 298,039

Int. Cl.³ C07D *499/12;* C07C *102/04, 103/375*

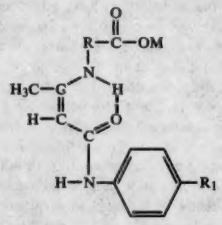
U.S. Cl. 260—239.1 7 Claims

1. A process for preparing an α-aminopenicillin having the formula:



wherein R is a group having the formula:

wherein R_2 is phenyl or substituted phenyl, and physiologically acceptable salts thereof, which comprises reacting a derivative of 6-aminopenicillanic acid in an aqueous solution at a temperature at or below −20° C. with at least 0.8 equivalent of a mixed anhydride prepared by reacting an amide-type Dane salt having the formula:



wherein R is a defined hereinbefore and R_1 is cyano or nitro and M is an alkali metal or triloweralkylamine, with an alkyl- or aralkylchlorocarbonate in the presence of a catalyst in a mixture of acetone and dimethylformamide or dimethylacetamide, adding thereto methylene chloride, hydrolyzing the resulting N-protected aminopenicillin to yield an α-aminopenicillin and a β-ketoamide, and recovering the α-aminopenicillin and the β-ketoamide.

4,366,099

PROCESS FOR TREATING COSMETIC OILS SO AS TO MODIFY THEIR PROPERTIES AND COSMETIC COMPOSITIONS CONTAINING THESE OILS

Quintino Gaetani, Bondy, and Christos Papantoniou, Montmorency, both of France, assignors to Societe Anonyme dite: L'Oreal, Paris, France

Filed Apr. 25, 1980, Ser. No. 143,730

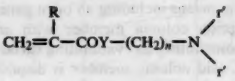
Claims priority, application France, May 4, 1979, 79 11273

Int. Cl.³ C08F *19/14*

U.S. Cl. 260—407 14 Claims

1. A process for modifying the properties of an unsaturated or saturated cosmetic oil by grafting so as to reduce its volatility and to improve its emulsifying power, said process comprising heating in the absence of a solvent and under an inert atmosphere, a natural or synthetic cosmetic oil with a homopolymerisable and hydrophilic monomer in the presence of an

initiator generating free radicals, said monomer being selected from the group consisting of N-vinylpyrrolidone, 2-hydroxymethyl acrylate, 2-hydroxymethyl methacrylate, acrylamide, methacrylamide, N-hydroxymethylacrylamide, N-(carboxyhydroxy)methacrylamide, acrylic acid, methacrylic acid, 2-vinylpyridine, 4-vinylpyridene and a monomer having the formula



(I)

wherein

R represents hydrogen or methyl,

Y represents —O— or —NH—,

r' represents methyl or ethyl and

n is 2 or 3, and

purifying the resulting modified cosmetic oil so as to remove any insoluble nongrafted homopolymer.

4,366,100

BIODEGRADABLE, OXIDATION-RESISTANT LIQUID ESTER MIXTURES WITH LOW TURBIDITY POINTS

Susanka S. Naskar, and Reinhard Pass, both of Witten, Fed. Rep. of Germany, assignors to Dynamit Nobel AG, Troisdorf, Fed. Rep. of Germany

Continuation of Ser. No. 117,723, Feb. 1, 1980, abandoned. This application Jul. 2, 1981, Ser. No. 280,028

Claims priority, application Fed. Rep. of Germany, Feb. 3, 1979, 2904164; Sep. 29, 1979, 2939663

Int. Cl.³ C11C *3/02*

U.S. Cl. 260—410.7 **11 Claims**

1. Completely biodegradable, toxicologically innocuous, oxidation-resistant, flavorless and odorless, light-colored, homogeneous liquid ester mixtures with low turbidity points, low evaporation losses at elevated temperatures, and viscosities and densities adjustable as desired, comprising the products of esterification of 1 mol of glycerin with from 1.4 to 2.8 mols of a saturated aliphatic straight chained monocarboxylic acid having from 6 to 10 carbon atoms, or mixtures thereof, and from 0.1 to 0.8 mol of a saturated aliphatic dicarboxylic acid, or mixtures or anhydrides thereof, said ester mixtures having hydroxyl numbers ranging from 5 to 20 and an acid number of less than 5.

3. A process for the preparation of completely biodegradable, oxidation-resistant, flavorless and odorless, light-colored, homogeneous liquid ester mixtures according to claim 1, wherein glycerin is esterified to hydroxyl-containing partial esters with an aliphatic straight chained monocarboxylic acid having from 6 to 10 carbon atoms, or mixtures thereof, in the ratio of 1 mol of glycerin to from 1.4 to 2.8 mols of aliphatic monocarboxylic acid at from 200° to 250° C., preferably under a vacuum, until an acid number of less than 50 is obtained, and simultaneously therewith or subsequent thereto the hydroxyl-containing partial esters are further esterified with from 0.1 to 0.8 mol of aliphatic dicarboxylic acids, or mixtures or anhydrides thereof, at from 200° to 250° C. until a hydroxyl number ranging from 5 to 20 and an acid number of less than 5 are obtained, the crude product then being decolorized and deodorized.

4,366,101

SYNTHESIS OF LONG-CHAIN ALKANES HAVING TERMINAL FUNCTIONALITY

Thomas W. Gibson, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 50,839, Jun. 21, 1979, Pat. No. 4,268,697. This application Feb. 10, 1981, Ser. No. 233,232

The portion of the term of this patent subsequent to May 19, 1998, has been disclaimed.

Int. Cl.³ C07F *7/00*

U.S. Cl. 260—429.3 **2 Claims**

1. A process for preparing a long-chain terminally substituted n-alkane, comprising:

(a) contacting an alpha-olefin having a carbon chain length greater than about C_{11} with an olefin metathesis catalyst; and

(b) contacting the product of step (a) with bis-cyclopentadienyl zirconium hydrohalide.

4,366,102

PROCESS FOR THE PREPARATION OF CHLOROFORMIC ACID ARYL ESTERS

Günter Rauchschwalbe, Cologne; Heinz U. Blank, Odenthal; Karl Mannes, and Dietmar Mayer, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 6, 1981, Ser. No. 261,082

Claims priority, application Fed. Rep. of Germany, May 22, 1980, 3019526

Int. Cl.³ C07C *68/02*

U.S. Cl. 260—463 **10 Claims**

1. In a process for the preparation of an aromatic chloroformic acid ester by contacting a phenol and phosgene, the improvement wherein the reaction is carried out in a homogeneous liquid phase at a temperature of 60° to 180° C. in the presence of an organic phosphorus compound of the formula

$$R^1R^2R^3PR^4_nX_n$$

in which

R^1, R^2 and R^3 independently of one another represent hydrogen, a straight chain, branched or cyclic alkyl radical of up to 12 carbon atoms, a straight chain, branched or cyclic alkenyl radical of 2 to 12 carbon atoms, an aralkyl radical selected from the group consisting of benzyl, phenylethyl, naphthylmethyl, naphthylethyl and 9-fluorenyl, aryl of up to 15 carbon atoms or halogen and two of the said radicals together with the phosphorus atom can form a 5-membered or 6-membered phosphorus-containing saturated or unsaturated heterocyclic radical of a member selected from the group consisting of a phosphol, a phospholene, a phospholane, a dibenzophospholane and a phosphocyclohexane,

X represents OH, homopolar-bonded halogen or an inorganic or organic acid anion,

R^4 denotes hydrogen or alkyl of up to 12 carbon atoms or, if X denotes halogen, can also denote halogen and

n denotes 0 or 1,

and in which, furthermore,

R^4 and X together can represent oxygen or sulfur.

4,366,103

DEODORIZED ORGANOTHIOPHOSPHOROUS AND EMULSIFIABLE CONCENTRATES THEREOF

David A. Pearce, Edison, and John J. Mehok, Clinton, both of N.J., assignors to Rhone-Poulenc Agrochimie, Lyon, France

Filed Dec. 19, 1980, Ser. No. 217,971

Int. Cl.³ C07C *9/201*

U.S. Cl. 260—967 **8 Claims**

1. A composition comprising an organothiophosphorus compound of the structure: $P(SR)_3$ wherein R is C_1–C_8 alkyl

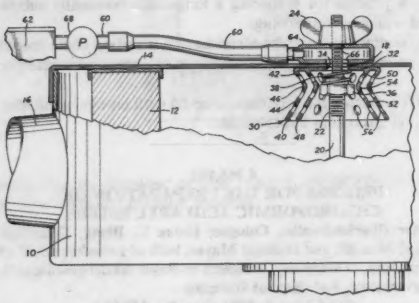
and a minor stabilizing amount of a C_3–C_{10} aliphatic or cycloaliphatic ketone.

4,366,104

FUEL FEED SYSTEM FOR INTERNAL COMBUSTION ENGINES

Harvey R. Miller, 3655 E. Amazon, Eugene, Oreg. 97405

Filed Jan. 25, 1982, Ser. No. 342,351
Int. Cl.³ F02M *13/06*
U.S. Cl. 261—18 A **3 Claims**



1. A fuel feed system arranged for use with an internal combustion engine of the type having a vacuum operated fuel intake system with an air inlet and an air filter with an interior opening into the intake system, the air filter also including a housing having a cover provided with a central aperture for receiving a mounting post, said fuel feed system comprising

(a) an auxiliary fuel container,

(b) atomizing means arranged for support on the mounting post interiorly of the air filter adjacent the cover of the air filter,

(c) and conduit means extending from said container,

(d) said conduit means terminating in a hollow housing arranged to be clamped on top of the cover of the air filter by means of the mounting post of the air filter,

(e) said housing and said atomizing means having apertures which receive the mounting post of the air filter and which are enlarged relative to the post whereby fuel from said housing is arranged to flow from said housing through said enlarged apertures in said housing and atomizing means and through the aperture in the air filter cover into said atomizing means and thence into the intake system.

4,366,105

HIGH VOLUME HUMIDIFIER-NEBULIZER

Christopher A. Nowacki, Arlington Heights, Ill., assignor to Respiratory Care, Inc., Arlington Heights, Ill.

Filed Aug. 3, 1981, Ser. No. 289,463
Int. Cl.³ A16M *15/00*
U.S. Cl. 261—35 **7 Claims**

1. A pediatric humidifier cartridge module which is heated by an external heating means, so that said cartridge module supplys both humid and heated breathable gas to a pediatric patient undergoing inhalation therapy, comprising:

a tubular cartridge main body portion having an inner peripheral wall, an upper end portion and a lower end portion, the lower end portion terminates in a transverse wall;

cap means attached to said upper end portion of said main body portion;

liquid inlet means formed in said transverse wall for allowing liquid to pass therethrough;

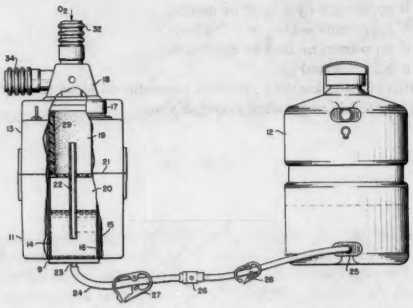
conduit means connected to said liquid inlet means and adapted to be connected to an external liquid source for supplying liquid to said main body portion;

a check valve positioned in said conduit means;

a disc positioned horizontally in the approximate center of said main body portion and dividing said main body portion into an upper and a lower chamber;

a tube positioned in the approximate center of said disc extending downwardly from said disc and terminating at a point approximately four-fifths of the distance between said disc and the bottom of said main body portion, and extending upwardly from said disc approximately half the distance of the downward extension;

liquid absorption means including an open generally tubular liquid absorption column member with an inner-peripheral face constituting an evaporating surface for humidifying liquid, said column member is disposed generally contiguously and coextensive with said upper chamber of



said main body portion and is constructed to be metered by liquid moving into said upper chamber through said tube extending through said disc;

an air space formed by said cap means of said upper end portion together with a portion of said main body portion above the humidifying liquid level in said lower end portion;

a breathable gas inlet feed pipe on said cap means for directing gas to be humidified into said main body portion and terminating in said main body portion; and an outwardly projecting humidified breathable gas outlet delivery pipe on said cap means in fluid communication with said air space, said delivery pipe adapted to be connected to an output delivery tube leading to a patient.

4,366,106

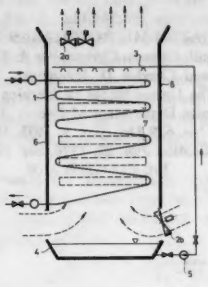
HEAT EXCHANGER

Istvan Benyak, Tata; Lajos Dudas, and Oszkar Pohl, both of Budapest, all of Hungary, assignors to Hutotechnika Ipari Szovetkezet, Tata and Villamosenergiaipari Kutato Intezet, Budapest, both of, Hungary

Filed Jun. 4, 1981, Ser. No. 271,031
Claims priority, application Hungary, Jun. 12, 1980, 1474
Int. Cl.³ B01F *3/04*
U.S. Cl. 261—156 **8 Claims**

1. In a heat exchanger for the condensation of vapors, comprising a coil pipe having an upper inlet end and a lower outlet end and a plurality of lengths of pipe arranged in zigzag fashion between said upper and lower ends, means to spray liquid from above onto the coil pipe, and means to move air upwardly along the coil pipe; the improvement in which said lengths of pipe are inclined downwardly at acute angles to the horizontal

from said inlet end to said outlet end and said acute angles progressively increase downwardly such that the angles between pairs of adjacent lengths of pipe progressively increase downwardly for a plurality of said pairs.



4,366,107

MAKING SHRINK-FIT OBJECTS

Hermann U. Voigt, Langenhagen, and Frank Patzke, Lehrte, both of Fed. Rep. of Germany, assignors to Kabel- u. Metallwerke Gutehoffnungshütte AG, Hanover, Fed. Rep. of Germany

Filed Oct. 3, 1980, Ser. No. 193,486
Claims priority, application Fed. Rep. of Germany, Oct. 8, 1979, 2940719
Int. Cl.³ H05B *6/64*
U.S. Cl. 264—25 19 Claims

1. The method of making a shrink object, comprising the steps of
providing a polymer blend with a graft component;
causing the graft component to be grafted upon the polymer, the graft component being of the type for cross-linking the polymer molecules in the presence of moisture;
exposing said grafted-on polymer to moisture for obtaining the cross-linking;
shaping the grafted-on polymer into a particular object;
expanding the completely shaped and completely cross-linked object at an elevated temperature; and maintaining the expanded state as the object cools.

4,366,108

LIQUID MATRIX SYSTEM BASED ON A MIXTURE OF EPOXIDE RESIN AND AN AMINE CURING AGENT FOR PRODUCING FIBRE-REINFORCED PLASTICS COMPONENTS

Karl Urech, Pratteln; Jürgen Habermeier, Pfeffingen, and Roland Moser, Basel, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jul. 16, 1981, Ser. No. 283,766
Claims priority, application Switzerland, Jul. 25, 1980, 5707/80
Int. Cl.³ C08G *59/50*
U.S. Cl. 264—137 7 Claims

1. A liquid matrix system based on a mixture of epoxide resin and an amine curing agent for producing fibre-reinforced plastics components, which system is characterised in that it has at 40° C. a dynamic viscosity of less than 400 mPa s, and contains
(a) a liquid diglycidyl ether of bisphenol-F or a mixture of liquid polyglycidyl compounds,
(b) diethyltoluylenediamine as curing agent for the glycidyl compound,
(c) BF_2-acetoacetanilide as a curing accelerator, and
(d) optionally additives,
wherein to one epoxide group of the component (a) there are 0.8–1.2 aminohydrogen atoms of the component (b), and wherein 94–99.7 percent by weight of the component (b) and 0.3–6 percent by weight of the component (c), relative to the amount of (b) and (c), are present.

4,366,109

METHOD FOR MAKING COATED MOLDED ARTICLES

Glenn R. Svoboda, Grafton, Wis., assignor to Freeman Chemical Corporation, Port Washington, Wis.

Division of Ser. No. 145,799, May 1, 1980, now Defensive Publication No. 4,293,659. This application Aug. 7, 1981, Ser. No. 291,011
Int. Cl.³ B29G *7/00*
U.S. Cl. 264—255 1 Claim

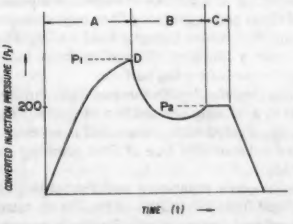
1. A method for producing a coated, molded, fiber-reinforced thermoset plastic article comprising
producing a fiber-reinforced, thermoset plastic article in a matched metal mold;
opening the said mold after the article has attained its intended shape;
introducing into the open mold a composition comprising:
(A) a blocked polyisocyanate which is the reaction product, essentially free of unreacted —NCO radicals, of e-caprolactam and organic polyisocyanate;
(B) a polyepoxide-polyacrylate which is the reaction product, essentially free of unreacted epoxy radicals of a polyepoxide and acrylic or methacrylic acid;
(C) ethylenically unsaturated polyester resin;
(D) copolymerizable alpha-beta ethylenically unsaturated monomer;
(E) an initiator for addition polymerization;
(F) a catalyst for the reaction of —NCO radicals and —OH radicals;
(G) fillers;
closing the mold and thereby spreading the said composition over at least one surface of the said article; retaining the mold in the closed condition at a molding temperature until the said article is further cured and the said composition is cured;
opening the mold and recovering a molded, fiber-reinforced thermoset plastic article having an adherent coating over at least one surface thereof.

4,366,110

SCREW IN-LINE TYPE INJECTION MOLDING METHOD AND APPARATUS FOR LOW-PRESSURE INJECTION MOLDING

Akiyoshi Morita, and Mitsuyoshi Sato, both of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Mar. 31, 1980, Ser. No. 136,083
Claims priority, application Japan, Mar. 31, 1979, 54-38810
Int. Cl.³ B29F *1/06*
U.S. Cl. 264—328.13 3 Claims



1. A low pressure injection molding method for urea mixed resin powder using a screw in line type injection molding machine having an injection cylinder, an injection piston, a hydraulic control circuit for controlling hydraulic pressure and a metal mold cavity, wherein said method comprises:
charging a molten and plasticized urea mixed resin powder

into said metal mold cavity so as to initiate filling of said metal mold cavity with said urea mixed resin powder during a primary injection phase;

maintaining the pressure of said urea mixed resin powder within said injection cylinder from 250 to 700 kg/cm^2 during said primary injection phase;

maintaining the velocity of said urea mixed resin powder during said primary injection phase within said injection cylinder from 35 to 50 mm/sec;

stopping said primary injection phase when said filling of said cavity is within a range of 80 to 95 percent filled;

further charging said urea mixed resin powder into said metal mold cavity so as to complete said filling of said metal mold cavity with said urea mixed resin powder during a secondary injection phase;

maintaining said pressure of said urea mixed resin powder within said injection cylinder from 50 to 200 kg/cm^2 during said secondary injection phase; and

maintaining said pressure of said urea mixed resin powder within said metal mold cavity for a predetermined period of time under a predetermined holding pressure equal to or less than said pressure maintained during said secondary injection phase after completing said primary and secondary injection phases.

4,366,111

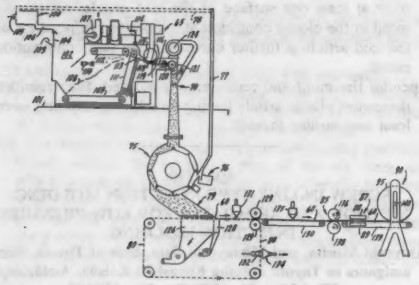
METHOD OF HIGH FIBER THROUGHPUT SCREENING

James H. Dinius, and Raymond Chung, both of Neenah, Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Continuation-in-part of Ser. No. 106,143, Dec. 21, 1979, abandoned. This application May 29, 1981, Ser. No. 268,174

Int. Cl.^{3} B29J *5/00*

U.S. Cl. 264—518 **9 Claims**



1. The method of forming an air-laid web of dry fibers having a basis weight of from 7.5 to 50 pounds per 2880 square feet comprising:

(a) delivering dry fibrous materials comprising individualized fibers and aggregated fiber masses suspended in an air stream to a rotary forming head having a forming chamber with a plurality of rotating rotor bars therein positioned over a forming surface;

(b) conveying the dry fibrous materials through the forming head in a moving aerated bed of individualized dry fibers and aggregated fiber masses and in an environment maintained substantially free of fiber grinding and disintegrating forces;

(c) continuously separating and discharging from the forming head from 1% to 10% of the fibrous materials from the aerated bed having a bulk density in excess of 0.2 g/cc.

(d) discharging the individualized fibers from the forming head through a high capacity slotted screen at a fiber throughput rate from about 0.5 lbs./hr./in.^{2} to about 1.50 lbs./hr./in.^{2};

(e) conveying said individualized fibers from said forming head through an enclosed forming zone to a moving foraminous forming surface whereby, an air-laid web of individualized fibers is formed on said foraminous forming surface.

4,366,112

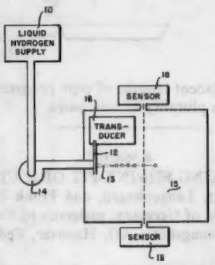
SOLID EVACUATED MICROSPHERES OF HYDROGEN

Robert J. Turnbull, Urbana; Christopher A. Foster, Champaign, both of Ill., and Charles D. Hendricks, Livermore, Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Division of Ser. No. 629,244, Nov. 6, 1975, Pat. No. 3,985,841. This application Jun. 22, 1976, Ser. No. 698,555

Int. Cl.^{3} G21B *1/00*

U.S. Cl. 376—151 **4 Claims**



1. A product consisting essentially of solid evacuated microspheres of hydrogen.

4. The product of claim 1 wherein said hydrogen is comprised of a mixture of deuterium and tritium.

4,366,113

INSTALLATION FOR A NUCLEAR POWER STATION WITH STAGGERED SWIMMING POOLS

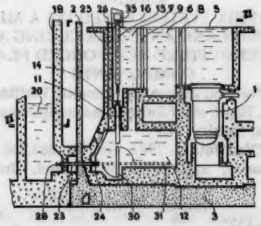
Roger Gigou, Herblay, France, assignor to Framatome, Courbevoie, France

Continuation of Ser. No. 947,829, Oct. 2, 1978, abandoned. This application Oct. 20, 1980, Ser. No. 199,109

Claims priority, application France, Oct. 4, 1977, 77 29845

Int. Cl.^{3} G21C *19/00*

U.S. Cl. 376—264 **1 Claim**



1. An installation for a nuclear power station comprising:

a reactor building containing a nuclear reactor and a first swimming pool at a level above said reactor for handling fuel units under water;

an adjoining building with a second swimming pool for the transfer of fresh fuel units and for the storage and deactivation of spent fuel units, the bottom of said second swimming pool being at the same level as the ground of the site of said reactor building;

an intermediate chamber in said reactor building below said first swimming pool and at the same level as said second

swimming pool, said chamber being entirely and permanently filled with water;

a horizontal pipeline and a vertical pipeline permanently filled with water, for the passage of the fuel units therethrough, and both opening into said intermediate chamber, said vertical pipeline communicating with said first swimming pool, and said horizontal pipeline communicating directly with said second swimming pool;

a leakproof shut-off valve for each pipeline;

interlocked control means for said valves such that said two valves cannot both be in open condition at the same time; and

a conveyor basket for transporting said fuel units and adapted to fit inside said horizontal pipeline and said vertical pipeline with negligible dead space around said basket when inside said pipelines.

4,366,114
DRY STORAGE FOR SPENT FUEL ASSEMBLIES

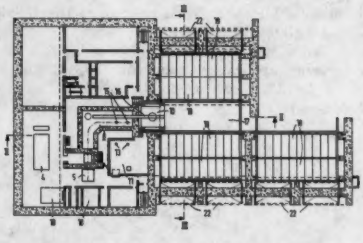
Roland Kühnel, Dietzenbach; Rainer Bokelmann, Offenbach; Magnus Scholz, Korschenbroich; Klaus Gebke, Gelnhausen, and Mariana Schüler, Offenbach, all of Fed. Rep. of Germany, assignors to Kraftwerk Union AG, Mulheim an der Ruhr, Fed. Rep. of Germany

Filed Jul. 16, 1980, Ser. No. 169,633

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1979, 2929467

Int. Cl.³ G21C *19/00*

U.S. Cl. 376—272 **7 Claims**



1. Storage building with gas-tight storage boxes for spent nuclear-reactor fuel assemblies, the building having an interior secured against penetration from the outside, devices disposed in said building for removing from shipping containers, by remote control, spent fuel assemblies delivered in said shipping containers into said building and for enclosing the fuel assemblies in the gas-tight storage boxes, and at least one storage chamber in said building having therein storage racks for supporting said fuel-element storage boxes, comprising a transporting device movable into respective horizontal and vertical coordinate positions for stacking said fuel-element storage boxes horizontally in said storage racks, said storage boxes containing heat-conducting medium in addition to the fuel assemblies, and heat removing devices disposed in an outer wall of said building for providing natural air circulation through said storage racks, said heat removing devices being connected with said storage chamber and extending to the outside.

4,366,115
STORAGE RACK FOR ASSEMBLAGES OF NUCLEAR FUEL ELEMENTS

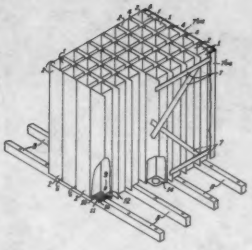
Raymond J. Schlumpf, 18 Rue du Fort Debout, B-7630 Brunehaut-Hollain, Belgium

Filed Aug. 1, 1980, Ser. No. 174,618

Claims priority, application France, Aug. 7, 1979, 79 20239

Int. Cl.³ G21C *19/00*

U.S. Cl. 376—272 **14 Claims**



1. A storage rack for nuclear fuel assemblages of circular or polygonal cross-section, comprised of several storage chambers consisting of hollow stems having a cross-section adapted to that of the said assemblages, placed one beside the other in a regular pattern of parallel rows, a spacing being provided between the walls of the neighboring chambers, each chamber being composed of one or more rectangular metal plates formed by bending, or melted metal sealing, or both, into a hollow stem having walls disposed to form a prismatic or cylindrical surface and being equipped at its lower part with a base capable of supporting a nuclear fuel assemblage, wherein the metal plates which form the chambers protrude outwardly from said prismatic or cylindrical surface at at least two locations of its contour while forming at these locations projections against which the neighboring chambers are applied and attached, the chambers, joined directly together by known means, without interposition of cross-pieces or of coupling or packing pieces, forming a self-supporting structure in which each chamber is attached to the nearest chambers of its own row and to the neighboring rows, said structure being capable of being disposed in a storage area for nuclear fuel assemblages.

4,366,116
NUCLEAR REACTOR FUEL ASSEMBLY DUCT-TUBE-TO-HANDLING-SOCKET ATTACHMENT SYSTEM

David W. Christiansen, and Bob G. Smith, both of Kennewick, Wash., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 5, 1981, Ser. No. 240,676

Int. Cl.³ G21C *3/06*

U.S. Cl. 376—446 **8 Claims**

1. A reusable nuclear reactor fuel assembly duct-tube-to-handling-socket attachment system, comprising:

(a) a nuclear reactor fuel assembly duct tube having an upper end;

(b) an annular transition ring coaxially fixed to said duct tube's upper end, with:

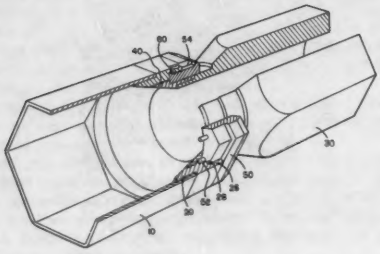
(i) a lower portion having a coaxially aligned inside-threaded section having a top region containing a longitudinally-disposed, first locking hole segment,

(ii) an upper portion having a longitudinally-disposed, annular, locking cup collar transversely wider than said inside-threaded section, and

(iii) an annular locking cup bottom surface, disposed generally transversely, which extends from said locking cup collar to said inside-threaded section;

(c) a nuclear reactor fuel assembly handling socket having a lower end;

(d) an annular adaptor ring coaxially fixed to said handling socket's lower end, with a lower portion having a coaxially aligned outside-threaded section having a bottom region containing a longitudinally-disposed, second locking hole segment, said outside-threaded section engagable with said transition ring's inside-threaded section, with said second locking hole segment alignable with said



transition ring's first locking hole segment to define a locking hole;

(e) an annular locking ring, transversely narrower than said locking cup collar, coaxially surrounding said adaptor ring, with a lower portion having a longitudinally-disposed locking pin matable with said locking hole, said locking ring longitudinally slidable, with said locking pin engagable and disengagable with said locking hole; and

(f) means for securing said locking cup collar to said locking ring when said locking pin is engaged in said locking hole.

4,366,117

COPPER ALLOY FOR USE AS LEAD MATERIAL FOR SEMICONDUCTOR DEVICES

Masahiro Tsuji, Urawa, Japan, assignor to Nikon Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 3, 1981, Ser. No. 270,064

Claims priority, application Japan, Jun. 6, 1980, 55/75575

Int. Cl.³ C22C *9/04*

U.S. Cl. 420—481 **3 Claims**

1. A copper alloy for use as a lead material for semi-conductor devices consisting of:

between about 0.04 and about 1.0 weight percent of Ni, between about 0.01 and about 0.3 weight percent of Si, between about 0.05 and about 15 weight percent of Zn, and the remainder Cu and inevitable impurities.

4,366,118

APPARATUS AND METHOD FOR LUMINESCENT DETERMINATION OF CONCENTRATION OF AN ANALYTE IN A SAMPLE

Roger A. Bunce, 117 Burberry Close, Bourneville, Birmingham; Timothy J. N. Carter, 14 Field Close, Sheldon, Birmingham B26 2NA; John H. Kennedy, 15 Dorset Rd., Edgbaston, Birmingham; Larry J. Kricka, 23 Kestrel Grove, Sellywood, Bourneville, Birmingham B30 1TQ, and Thomas P. Whitehead, 70 Northumberland Spa, Warwickshire, all of England

PCT No. PCT/GB79/00102, § 371 Date Feb. 14, 1980, § 102(e) Date Feb. 14, 1980, PCT Pub. No. WO80/00100, PCT Pub. Date Jan. 24, 1980

PCT Filed Jun. 13, 1979, Ser. No. 189,930

Claims priority, application United Kingdom, Jun. 14, 1978, 26924/78

Int. Cl.³ G01N *21/76*

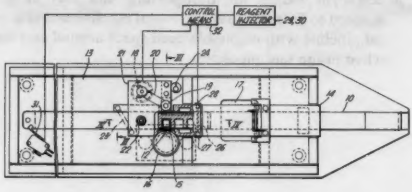
U.S. Cl. 422—57 **8 Claims**

1. Apparatus for luminescent determination of the amount or concentration of an analyte in a sample, comprising

a block member including a plurality of cells, each cell being adapted to contain a sample, and each having a window through which light can leave the cell; a test chamber for mounting the block member containing at least one cell;

a photodetector mounted to receive light emitted from a cell and disposed at a testing station in said test chamber to provide an output signal dependent on said emitted light;

delivery means for delivering a predetermined amount of reagent into a cell at the testing station, said delivery means including a reagent injector mounted for reciprocal movement into and out of a cell to deliver reagent into the cell substantially at the bottom thereof; and



transport means adapted for moving the cells successively to the testing station including settable control means for automatically controlling the transport means and delivery means to establish cyclic operation in which a cycle comprises moving a cell to the testing station, delivering reagent into the cell, detecting the light output from that cell for a predetermined period and finally moving the cell away from the testing station, the control means being actuated from photo sensitive means which is illuminated from an infrared light source through a bore in block member when any cell is at the testing station.

4,366,119

DISCRETE TYPE AUTOMATED CHEMICAL ANALYTIC APPARATUS

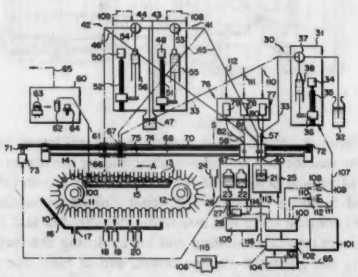
Masaki Takeuchi, Otawara, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Mar. 16, 1981, Ser. No. 243,737

Claims priority, application Japan, Mar. 20, 1980, 55-34953

Int. Cl.³ G01N *33/48, 35/06, 35/04*

U.S. Cl. 422—65 **15 Claims**



1. A discrete type automated chemical analytic apparatus for continuously analyzing a large number of specimens with respect to a plurality of items of examination in a single reaction channel comprising:

endless belt conveyor means having a top run;

drive means for moving the endless belt conveyor means;

a plurality of reaction tubes spatially arranged in the direction in which the conveyor means is moved, those of the reaction tubes which are positioned on the top run of the

conveyor means defining a reaction line, the direction in which the reaction line travels being a time axis direction;
specimen holding means;
reagent holding means;
specimen discharge means for delivering a specimen from said specimen holding means to a selected reaction tube mounted on the reaction line, said specimen discharge means including conduit means;
reagent discharge means for delivering one or more reagents to said selected reaction tube on the reaction line, said reagent discharge means including conduit means;
measuring means provided at the terminal end of the reaction line for analyzing said reacted specimen at a fixed measuring point on the reaction line;
means for washing and drying the reaction tubes after removal of said specimen in order to render them ready for the subsequent application;
carrier means for moving the conduit means of the specimen discharge means and the conduit means of the reagent discharge means from a point facing the specimen holding means and the reagent holding means to selected points along the time axis direction facing the selected one of the reaction tubes mounted on the reaction line, said carrier means being constructed and selectively movable to deliver the specimen and the reagent to the selected reaction tube at the same point and at a different point on the reaction line in the time axis direction;
means for driving said carrier means;
whereby a reaction time can be properly controlled in accordance with a kind of specimen and items of examination.

4,366,120

SMALL SCALE CHLORINE DIOXIDE PLANT

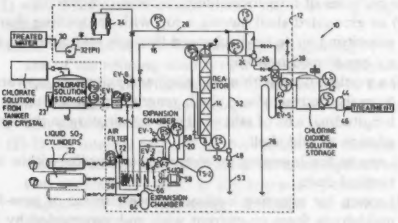
Gerald Cowley, Mississauga, Canada, assignor to Erco Industries Limited, Islington, Canada

Division of Ser. No. 143,888, Apr. 25, 1980, Pat. No. 4,250,159. This application Aug. 27, 1980, Ser. No. 181,766

Claims priority, application United Kingdom, May 31, 1979, 7919026

Int. Cl.[3] **G05D** *9/00, 10/00;* **G05B** *9/00;* **B01J** *8/00*

U.S. Cl. 422—106 **1 Claim**



1. An automated chlorine dioxide-producing plant, comprising:

a chlorine dioxide-forming reactor comprising an upright tubular gas-liquid countercurrent contact tower having an upper end and a lower end;

first feed conduit means communicating with said upper end of said tower for feed of aqueous sodium chlorate solution thereto, sodium chlorate storage tank means in communication with said first feed conduit means, sodium chlorate solution pump means located between said sodium chlorate solution storage tank means and said first conduit means, and first selectively operable valve means located between said sodium chlorate solution storage tank and said sodium chlorate solution pump means;

second feed conduit means communicating with said lower end of said tower for feed of gaseous sulphur dioxide thereto and liquid sulphur dioxide storage means in communication with expansion chamber means for converting liquid sulphur dioxide to gaseous sulphur dioxide and communicating with said second feed conduit means, whereby sodium chlorate solution flowing downwardly in said tower countercurrently contacts upwardly-flowing sulphur dioxide to cause reaction therebetween to form chlorine dioxide gas and liquid byproduct;

gaseous product conduit means communicating with said upper end of said tower for removal of said gaseous chlorine dioxide therefrom and liquid product conduit means communicating with said lower end of said tower for removal of said liquid by-product therefrom;

first water ejector means communicating with said gaseous product conduit means, first water conduit means communicating with said water ejector means for flow of water thereto, whereby said first water ejector means subjects said tower to subatmospheric pressure through said gaseous conduit and water contacting said chlorine dioxide in said first water ejector means forms an aqueous chlorine dioxide solution therefrom, aqueous chlorine dioxide solution conduit means communicating with said first water ejector means, chlorine dioxide solution storage means communicating with said aqueous chlorine dioxide solution conduit means, and second selectively operable valve means located between said chlorine dioxide solution storage means and said aqueous chlorine dioxide solution conduit means;

second water ejector means communicating with said liquid product conduit means, second water conduit means communicating with said second water ejector means for flow of water therethrough, whereby said second water ejector means applies a suction to the lower end of said tower to remove said liquid by-product therefrom through said liquid product conduit means and to dilute the same, and aqueous effluent conduit means communicating with said second water ejector means;

water pump means having an upstream side and a downstream side adapted to communicate on its upstream side with a source of water and communicating on its downstream side in parallel with said first and second water ejector means through respective first and second water conduit means;

heater means in heat exchange relationship with said second feed conduit means for heating sulphur dioxide passing therethrough, air conduit means in heat exchange relationship with said heater means and communicating with said second feed circuit means downstream of said heat exchange relationship between said second feed conduit means and said heater means, and third selectively operable valve means in said air conduit means;

flush water conduit means in heat exchange relationship with said heater means and communicating with said water pump means and said first feed conduit means, and fourth selectively operable valve means in flush water conduit means;

first level sensor means for sensing a predetermined lower level of chlorine dioxide solution in said chlorine dioxide solution storage tank corresponding to a level at which production of chlorine dioxide solution by said plant is required to commence, and second level sensor means for sensing a predetermined upper level of chlorine dioxide solution in said chlorine dioxide solution storage tank corresponding to a level at which production of chlorine dioxide solution by said plant is required to cease;

first temperature sensor means for sensing the temperature of sodium chlorate solution in said sodium chlorate solution storage tank, second temperature sensor means for sensing the temperature of sulphur dioxide gas in said second feed conduit means downstream of said communication with said air feed conduit means, third temperature sensor means for sensing the temperature of chlorine dioxide gas in said gaseous product conduit means, and fourth temperature sensor means for sensing the temperature of liquid by-products at the lower end of said tower;

first pressure sensor means for sensing the pressure of liquid

sulphur dioxide in said sulphur dioxide storage means, second pressure sensor means for sensing the pressure of chlorine dioxide gas in said gaseous product conduit means, third pressure sensor means for sensing the differential pressure between the upper end and lower end of said tower, fourth pressure sensor means for sensing the pressure of sulphur dioxide gas in said second feed conduit means at the location of said second temperature sensor means, and fifth pressure sensor means for sensing the pressure of water on said downstream side of said water pump means;

flow sensor means for sensing flow or no flow of sodium chlorate solution through said first feed conduit means; and

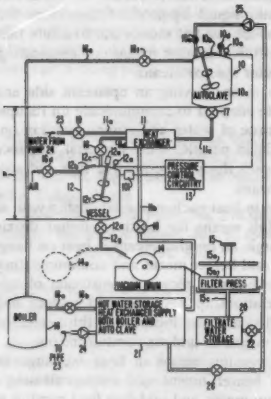
means selectively actuating each of said selectively-actuable valve means in predetermined manner in response to predetermined parameters sensed by said sensors.

4,366,121

SYSTEM FOR FORMING A REACTION PRODUCT SUCH AS CALCIUM SILICATE

Pieter Krijgsman, Wapenveld, Netherlands, assignor to Warrior Insulation Company B. V., Emmen, Netherlands

Division of Ser. No. 12,886, Feb. 18, 1979, Pat. No. 4,238,240.
This application Jun. 27, 1980, Ser. No. 163,729
Claims priority, application Netherlands, Sep. 21, 1978, 7809621
Int. Cl.³ B01J *3/04;* G05D *7/00*
U.S. Cl. 422—110 **9 Claims**



1. A system for forming a calcium silicate reaction product comprising:

an autoclave for receiving calcium hydroxide, silicon dioxide and water and for reacting these constituents to form a calcium silicate slurry;

a holding vessel for receiving the calcium silicate slurry from said autoclave; means for mixing fibrous material with said calcium silicate slurry in said holding vessel;

a flow passage connecting said autoclave to said holding vessel for allowing the passage of said slurry from said autoclave to said holding vessel;

means for transferring heat from said slurry during its passage through said flow passage; and

means for maintaining the pressure in said holding vessel a controlled amount beneath the pressure in said autoclave such that during the transfer of the slurry from said autoclave to said holding vessel there will be minimal structural damage to the slurry during its transfer to said holding vessel.

4. A system for forming a reaction product comprising:

an autoclave for use in forming said reaction product,

a holding vessel for receiving the reaction product formed in said autoclave;

a flow passage connecting said autoclave to said holding vessel,

means for maintaining the pressure in said holding vessel in a controlled manner beneath the pressure in said autoclave during the transfer of the reaction product in said autoclave through said flow passage to said holding vessel; and

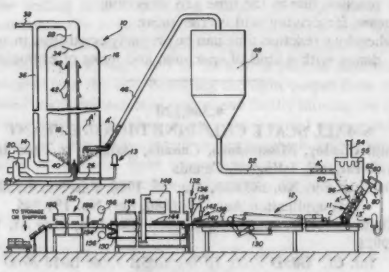
means for removing a portion of the heat from said reaction product during the passage of said reaction product through said flow passage.

4,366,122

APPARATUS FOR MAKING UREA-FORMALDEHYDE INSULATION

Charles E. Elmore, and David H. Harmon, both of Dallas, Tex., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 119,870, Feb. 8, 1980, Pat. No. 4,291,128.
This application Feb. 25, 1981, Ser. No. 237,858
Int. Cl.³ C08J *9/36;* B01J *8/08*
U.S. Cl. 422—133 **3 Claims**



1. A particle generator for producing partially cured, discrete particles of urea-formaldehyde foam comprising:

(a) an elongated shell having a top with an opening therein permitting air to be discharged through said opening, and a cone-shaped bottom:

(b) a vertical duct within said shell and extending upwardly from the bottom of said shell, generally disposed along the longitudinal axis of said shell and terminating in the upper portion of said shell;

(c) means for injecting an airstream upwardly within said vertical duct;

(d) means for injecting a monofilament stream of urea-formaldehyde foam co-current with and surrounded by the airstream;

(e) first baffle means between the end of said duct and said top opening for preventing air flow directly from said duct to said top opening and for directing said stream of urea-formaldehyde foam radially outwardly after being discharged from said duct to form discrete particles of urea-formaldehyde foam that are allowed to fall to the bottom of said shell;

(f) conical baffle means extending outwardly and downwardly from said vertical duct near the upper portion of said vertical duct and said conical baffle means forming air intake passages for recycling air in the upper portion of said shell for forming at least a portion of the airstream injected within said vertical duct; and

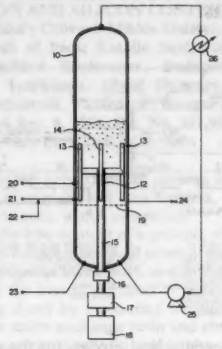
(g) second baffle means positioned towards the bottom of said shell for creating a quiescent zone between said second baffle means and said bottom for facilitating removal of said discrete urea-formaldehyde foam particles.

4,366,123

ANCHOR AGITATOR FOR GASEOUS PHASE POLYMERIZATION VESSEL

Akifumi Kato, Ohtake; Nobuhiko Kaneshige, Iwakuni, and Ryoichi Yamamoto, Waki, all of Japan, assignors to Mitsui Petrochemical Industries Ltd., Tokyo, Japan

Filed Sep. 21, 1981, Ser. No. 304,081
Int. Cl.[3] B01F 7/18; B01J 12/02, 8/10
U.S. Cl. 422—135 3 Claims



1. In an anchor agitator for a gaseous phase polymerization vessel, comprising a rotating shaft, at least two pairs of arms provided on the rotating shaft in mutually crossing positions, and agitating blades provided at opposite outward end portions of each pair of arms, said blades extending substantially parallel along the axis of the rotating shaft and being located substantially equidistant from the axis of the rotating shaft in each pair of arms, the improvement wherein

(I) of said at least two pairs of blades, one pair of blades is a pair of main blades located farther from the axis of the rotating shaft than the remaining at least one pair of blades, and said remaining blades are subsidiary blades located nearer to the axis of the rotating shaft,

(II) each of the main blades meets the following requirements:

(II-2) its horizontal section crossing at right angles to the axis of the rotating shaft is of a triangular shape, and in rotation, the interior angle α of the vertex A forming the forward end of the triangle in the advancing direction is defined by $10° \leqq \alpha \leqq 45°$;

(II-2) the internal angle β of the vertex B of the triangle which is farther from the axis of the rotating shaft of the two vertexes B and C in the rearward portion of the triangle in the advancing direction is defined by $80° \leqq \beta \leqq 150°$;

(II-3) the shortest distance r_1 between the vertex A and the axis of the rotating shaft and the shortest distance r_2 between the vertex B and the axis of the rotating shaft satisfy the relation $0.8r_1 \leqq r_2 \leqq r_1$; and

(II-4) the distance l between the vertex A and the vertex C and the distance r_1 satisfy the relation $0.1r_1 \leqq l \leqq 0.5r_1$; and

(III) each of the subsidiary blades meets the following requirements:

(III-1) the shortest distance r_3 between the axis of the rotating shaft and that site of each subsidiary blade which is farthest from the axis of the shaft and the distance r_1 satisfy the relation $0.2r_1 \leqq r_3 \leqq 0.8r_1$; and

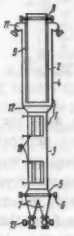
(III-2) each of the subsidiary blades is located within a range of $\pm 60°$ with respect to a straight line perpendicularly crossing the straight line which passes through the centers of the triangles of the main blades in the horizontal section.

4,366,124

APPARATUS FOR DISSOLVING POLYDISPERSE ORES

Viktor B. Brounshtein, ulitsa B. Zelenina, 22, kv. 2; Vladimir I. Petrov, ulitsa partizana Germana, 6, kv. 81; Rudolf R. Otsup, ulitsa Burtseva, 22, kv. 92; Galina P. Ignatieva, Murinsky prospekt, 2, kv. 11; Vladlen V. Kozlovsky, Varshavskaya ulitsa, 75, kv. 19; Leonard Y. Lipshits, Sofiiskaya ulitsa, 53, kv. 63; Oleg V. Zhuravlev, Moskovsky prospekt, 79, kv. 156, all of Leningrad; Mikhail G. Koba, ulitsa Ordzhonikidze, 123, kv. 60, Perm; Konstantin B. Seliverstov, Dmitrovskoe shosse, 65, korpus 1, kv. 58; Tamara A. Igisheva, Ivano-v-skaya ulitsa, 18, kv. 31, both of Moscow; Petr A. Drobyazko, prospekt Lenina, 3, kv. 20, Berezniki Permskoi oblasti; Anatoly I. Motin, ulitsa Lenina, 5, kv. 16, Berezniki Permskoi oblasti; Viktor D. Fot, ulitsa Pyatiletki, 48, kv. 9, Berezniki Permskoi oblasti; Lev T. Yakimov, prospekt Lenina, 12, kv. 7, Berezniki Permskoi oblasti, and Boris G. Kuznetsov, ulitsa Sergeya Esenina, 14, korpus 2, kv. 33, Leningrad, all of U.S.S.R.

Filed Jul. 28, 1980, Ser. No. 173,027
Int. Cl.[3] B01D 11/02; B01F 1/00
U.S. Cl. 422—278 5 Claims



1. An apparatus for dissolving polydisperse ores, comprising:

a cylindrical housing in the form of two coaxial cylinders mounted one above the other, the relation between the diameters and the heights thereof being respectively 1.4–1.6 and 0.5–1.5, so as to ensure separation of ore particles of a (−1.5 to 0.75) mm size class;

a hopper mounted coaxially with the housing and into which said polydisperse ores are introduced;

a device for feeding a liquid phase into said apparatus, installed in the lower portion of said cylindrical housing; and

devices for removal of the solid undissolved component and the final product.

4,366,125

STERILIZATION APPARATUS AND PROCESS UTILIZING SYNERGISTIC EFFECT OF COMBINING HYDROGEN PEROXIDE AND ULTRA-VIOLET-RAY STERILIZATION

Tokio Kodera, Fuchu; Masaru Hoshino, Tokyo, and Kimiaki Hyakutome, Tokyo, all of Japan, assignors to Dai Nippon Insatsu Kabushiki Kaisha, Tokyo, Japan

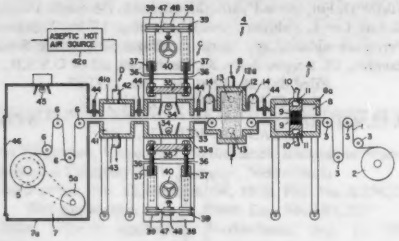
Filed Nov. 24, 1980, Ser. No. 209,663
Claims priority, application Japan, Nov. 27, 1979, 54-153157
Int. Cl.[3] A61L 2/10, 2/22
U.S. Cl. 422—295 4 Claims

1. A sterilizing apparatus comprising:

a plurality of housings communicatively connected in sequence and enclosing respective aseptic chambers which are constantly under positive pressure and adapted to permit the passage successively therethrough in one direction of a material to be sterilized;

hydrogen peroxide sterilizing means in one of the housing for applying a thin film of hydrogen peroxide of low concentration at room temperature on the outer surfaces of the material thereby to carry out presterilization, said sterilizing means applying a mist of hydrogen peroxide

onto the outer surface of the material in sufficient quantity to produce cloudiness and the mist comprises droplets of hydrogen peroxide of a particle size of approximately 10 microns, the hydrogen peroxide sterilizing means further comprising a vessel containing hydrogen peroxide of low concentration at room temperature, an ultrasonic generator coupled to said vessel for generating a hydrogen peroxide mist in the housing for said hydrogen peroxide sterilizing means through which the material is caused to travel, and means forming a chamber containing an ultrasonic vibration propagation medium, said propagation medium-containing chamber being located between said



ultrasonic generator and the bottom of said vessel, whereby said ultrasonic generator acts through said propagation medium to generate said mist without the generator directly contacting said hydrogen peroxide;

ultra-violet-ray sterilization means in a housing downstream in said travel direction from the hydrogen peroxide sterilizing means for irradiating said outer surface with the hydrogen peroxide film thereon with ultra-violet-rays; and

drying means in a housing downstream from the ultra-violet-ray sterilizing means for drying the material with aseptic hot air.

4,366,126

REMOVAL OF MOLYBDENUM FROM URANIUM SOLUTIONS

Harry E. Gardner, Grand Junction, Colo., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Dec. 14, 1979, Ser. No. 103,441
Int. Cl.³ C01G *43/00*
U.S. Cl. 423—7 **3 Claims**

1. Method of recovering uranium from an alkaline carbonate leach solution containing uranium and molybdenum, which comprises:

(a) adding a reactive lead compound selected from the group consisting of lead oxide, lead chloride, lead nitrate, lead acetate, lead sulphate, lead carbonate and lead hydroxide, to said solution with agitation in an amount sufficient to supply at least 90 percent of the stoichiometric quantity of lead ion required to fully react with the molybdenum present to form insoluble lead molybdate;

(b) continuing the reaction with agitation until the concentration of molybdenum has been reduced to below about 0.013 gram molybdenum per liter of solution;

(c) filtering said solution to remove substantially all of the insoluble lead molybdate;

(d) recovering uranium from said solution by ion exchange extraction, and

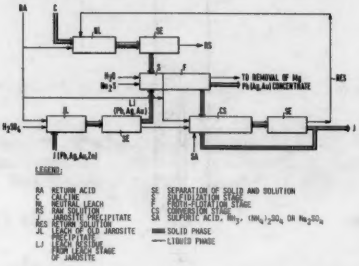
(e) recycling said solution for leaching additional uranium from uranium-bearing materials.

4,366,127

HYDROMETALLURGICAL PROCESS FOR THE RECOVERY OF LEAD, SILVER AND GOLD, AS WELL AS ZINC, FROM IMPURE JAROSITE RESIDUES OF AN ELECTROLYTIC ZINC PROCESS

Jussi K. Rastas, and Jens R. Nyberg, both of Pori, Finland, assignors to Outokumpu Oy, Helsinki, Finland

Filed Sep. 29, 1981, Ser. No. 306,673
Claims priority, application Finland, Sep. 30, 1980, 803099
Int. Cl.³ C22B *3/00*
U.S. Cl. 423—26 **10 Claims**



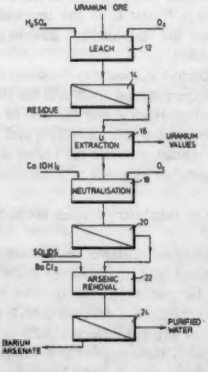
1. A hydrometallurgical process for the recovery of lead, silver, gold and zinc from the impure jarosite residue of an electrolytic zinc process, comprising: leaching the jarosite residue in a sulfuric-acid-bearing solution in order to produce a leach residue which contains lead, silver and gold and a ferrisulfate-bearing solution and to separate them from each other; then sulfidizing and froth-flotating the leach residue in order to recover a combined concentrate which contains lead, silver and gold; and feeding the ferrisulfate-bearing solution to a ferritic treatment stage, in which ferrisulfate and ferrites react in the presence of ions of alkali and ammonium at 80°–105° C. to form pure jarosite and zinc sulfate.

4,366,128

REMOVAL OF ARSENIC FROM AQUEOUS SOLUTIONS

Donald R. Weir, and Ian M. Masters, both of Fort Saskatchewan, Canada, assignors to Sherritt Gordon Mines Limited, Toronto, Canada

Filed Oct. 1, 1980, Ser. No. 192,766
Claims priority, application Canada, Aug. 22, 1980, 358966
Int. Cl.³ C01G *28/02*
U.S. Cl. 423—87 **14 Claims**



1. A process for removing arsenic from an aqueous solution containing arsenic in the form of a soluble arsenate selected

from the group consisting of calcium arsenate and ferric arsenate, comprising ensuring that the pH of the solution is at least about 10, adding a soluble barium salt to precipitate arsenic as barium arsenate, and removing the precipitated barium arsenate from the solution.

4,366,129

PROCESS FOR PRODUCING ALUMINA AND FERRIC OXIDE FROM ALUMINIUM CARRIERS WITH HIGH IRON AND SILICON CONTENT

Béla Czeglédi; Mihály Csövári; Miklós Erdélyi; Lajos Streker; István Tóth, all of Pécs; Katalin Szabó née Mogyorósi, Tatabanya; Szilárd Riederauer, Budapest, and Géza Szentgyörgyi, Tatabánya, all of Hungary, assignors to Tatabányi Szénbányák, Tatabánya, Hungary

Filed Apr. 8, 1981, Ser. No. 251,997
Int. Cl.³ C01F *7/22, 7/26*
U.S. Cl. 423—112 5 Claims

1. A process for the preparation of alumina and ferric oxide from low-grade aluminium and iron carriers, having a high iron and silicon content, which comprises:

(a) dissolving the iron content of a ground, mineral material in an aqueous hydrochloric acid solution containing 200 to 420 g./lit. of hydrochloric acid, at 90° to 130° C.;

(b) eliminating the iron in the form of ferric chloride from the resulting slurry by contacting the slurry in counterflow with an anion exchange resin and eluting the resin;

(c) adding concentrated sulfuric acid in about a stochiometric amount calculated for the soluble oxides to the deionized slurry, heating the mixture to 140°–160° with stirring and recycling the liberated hydrochloric acid formed into the deironization step;

(d) distilling the excess sulfuric acid at 300°–400° C. and recycling the acid;

(e) dissolving the solid residue in water and filtering off the insoluble materials, and

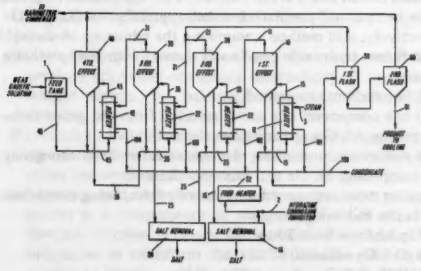
(f) evaporating the ferric chloride solution from step (b) and the aluminium sulfate solution from step (e) obtained, subjecting them to thermal decomposition at about 850° C. to produce Fe_2O_3 and a product substantially consisting of γ-Al_2O_3 and recycling the hydrochloric acid and sulfur trioxide formed.

4,366,130

PROCESS FOR REMOVING RESIDUAL HYDRAZINE FROM CAUSTIC SOLUTIONS

Gyaneshwari P. Khare, Wichita, Kans., assignor to Vulcan Materials Company, Birmingham, Ala.

Continuation-in-part of Ser. No. 172,703, Jul. 25, 1980, Pat. No. 4,282,178, which is a continuation-in-part of Ser. No. 94,390, Nov. 15, 1979, abandoned. This application Apr. 6, 1981, Ser. No. 251,080
Int. Cl.³ C01D *1/36*
U.S. Cl. 423—201 7 Claims



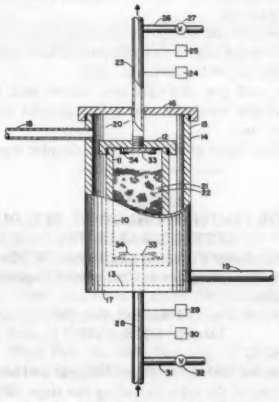
7. A process for removing hydrazine from an aqueous caustic solution characterized by a pH of at least 14 and containing about 40 to 80% sodium hydroxide and from 5 parts per billion to about 5 parts per million hydrazine or an inorganic or organic derivative of hydrazine, which process comprises adding to said solution a five- to ten-fold stoichiometric excess of an oxidant relative to the amount of hydrazine present in the solution, said oxidant being selected from the group consisting of hydrogen peroxide, peroxides of non-toxic mono- or divalent metals, peroxy acids and non-toxic metal salts thereof, and hypochlorites of non-toxic metals and agitating the resulting mixture at a pH of at least 14 and at a temperature between about 20° and 75° C. until the residual hydrazine is destroyed.

4,366,131

HIGHLY REACTIVE IRON OXIDE AGENTS AND APPARATUS FOR HYDROGEN SULFIDE SCAVENGING

Irwin Fox, 37 Meadowbrook Country Club Estates, Ballwin, Mo. 63011, assignor to Irwin Fox, Ballwin, Mo.; Alvin Samuels, New Orleans, La. and David Samuels, St. Louis, Mo.

Continuation-in-part of Ser. No. 44,026, May 31, 1979, Pat. No. 4,246,244, and a continuation-in-part of Ser. No. 963,797, Nov. 27, 1978, Pat. No. 4,246,243. This application Jan. 19, 1981, Ser. No. 226,159
The portion of the term of this patent subsequent to Jan. 20, 1998, has been disclaimed.
Int. Cl.³ B01D *53/34*
U.S. Cl. 423—231 4 Claims



1. A method of scavenging hydrogen sulfide from a gas containing the same which comprises

(a) contacting said gas with substantially dry particles of a hydrogen sulfide-reactive iron oxide having a surface area of at least 4.0 m^2/g, a kinetic "K" value in excess of 1000 and composed substantially of a crystalline phase of Fe_3O_4 and an amorphous Fe_2O_3 moiety,

(b) continuing said contacting until the hydrogen sulfide has reacted with said particles and its concentration in said gas has been reduced to a predetermined level, and

(c) separating the gas so scavenged from said particles.

4,366,132
METHOD OF AND APPARATUS FOR THE CHEMISORPTIVE SCRUBBING OF WASTE GASES

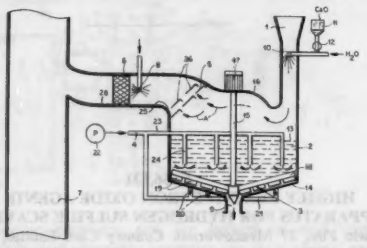
Heinz Hölter, Beisenstrasse 39-41, 4390 Gladbeck, Fed. Rep. of Germany; Heinz Gresch, Dortmund, Fed. Rep. of Germany; Heinrich Igelbüscher; Heribert Dewert, both of Gladbeck, Fed. Rep. of Germany; Berthold Dzikowski, Essen, Fed. Rep. of Germany, and Hans-Jürgen Twichaus, Gladbeck, Fed. Rep. of Germany, assignors to Heinz Hölter, Gladbeck, Fed. Rep. of Germany

Filed Mar. 5, 1981, Ser. No. 240,892

Claims priority, application Fed. Rep. of Germany, Mar. 7, 1980, 3008718

Int. Cl.³ B01D *53/34;* B01J *10/00*

U.S. Cl. 423—242 **2 Claims**



2. The method of operating a gas washer comprising the steps of:

scrubbing a stack gas containing sulfur dioxide with lime containing scrubbing water and passing a mixture thereof downwardly through a scrubbing stretch;

collecting scrubbing liquid with calcium sulfite contained therein in an oxidation basin directly below said stretch so that liquid from said mixture is recovered in said basin and gas sweeps across the top of the liquid in said basin to an outlet therefrom;

oxidizing the calcium sulfite to calcium sulfate in this basin thereby forming crystals of calcium sulfate therein;

removing said crystals from said basin;

discharging said gas through said outlet and through a coarse droplet separator and a fine droplet separator in succession; and

spraying water upon at least said fine droplet separator.

4,366,133
PROCESS FOR LIMITING CHLORIDE BUILDUP IN SO_2 SCRUBBER SLURRY

Philip C. Rader; Dante Frabotta, and Robert W. Hanson, all of Birmingham, Ala., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Jun. 1, 1981, Ser. No. 268,616

Int. Cl.³ C01B *17/00*

U.S. Cl. 423—242 **4 Claims**

1. A process for wet scrubbing a flue gas to remove sulfur oxides therefrom of the type including the steps of contacting the sulfur oxide laden flue gas with an aqueous reactant mixture comprised of water, unreacted sulfur oxide absorbent and small amounts of water soluble chloride impurities whereby the sulfur oxide absorbent compound reacts with and absorbs the sulfur oxides contained in the flue gas, collecting and dewatering the spent reactant mixture to yield a relatively dry sludge of sulfur-containing solids and a relatively solids-free chloride containing liquor, discharging the relatively dry sludge to disposal, recycling the relatively solids-free chloride containing liquor removed from the spent reactant mixture for mixing with unreacted sulfur oxide absorbent to form additional reactant mixture for contacting with the sulfur oxide laden flue gas, characterized in that the concentration of chloride in the reactant mixture is controlled by the steps of:

a. prior to mixing the relatively solids-free chloride containing recycle liquor from the dewatering step with unreacted sulfur oxide absorbent, passing a purge stream of the relatively solids-free chloride containing recycle liquor from the dewatering step in contact with a hot drying gas so as to evaporate the water in the purge stream and crystalize the chloride impurities contained in the purge stream; and

b. separating the crystalized solid particles of chloride salt from the drying gas.

4,366,134
FLUE GAS DESULFURIZATION PROCESS

Louis B. Korosy, Wantagh, and Peter J. Senatore, Baldwin, both of N.Y., assignors to Pfizer Inc., New York, N.Y.

Filed Nov. 14, 1979, Ser. No. 94,392

Int. Cl.³ C01B *17/00*

U.S. Cl. 423—243 **11 Claims**

1. A process for the desulfurization of gas containing from about 100 ppm to about 30 volume percent sulfur dioxide, which comprises

contacting said gas at a temperature of from about 15° to 80° C. with an aqueous solution at a pH of from about 3 to 9 containing potassium citrate at a concentration of from about 0.1 molar to saturation to absorb sulfur dioxide from said gas into said solution;

separating said contacted gas from said contacted solution;

heating said separated solution to strip sulfur dioxide therefrom;

and recovering said heated solution for reuse in said process.

4,366,135
METHOD FOR PREPARING ZEOLITES

Raymond Le Van Mao; Orlando Pilati, both of Milan; Enrico Moretti, Bollate; Romano Covini, Milan, and Fausto Genoni, Samarate, all of Italy, assignors to Montedison S.p.A., Milan, Italy

Continuation-in-part of Ser. No. 163,103, Jun. 26, 1980, abandoned. This application Dec. 9, 1980, Ser. No. 214,763

Claims priority, application Italy, Jun. 29, 1979, 23978 A/79

Int. Cl.³ C01B *33/28*

U.S. Cl. 423—329 **10 Claims**

1. A method for preparing zeolites having the formula:

$$(1.5\pm0.6)M_{2/n}O.Al_2O_3.ySiO_2.zH_2O$$

wherein y ranges from 20 to 90, z ranges from 2 to 12, M is at least one cation and n is the valence of M, and wherein Al and Si can be optionally replaced, at least partially, by Ga and Ge respectively, said method comprising the admixing of diethylpiperidinium hydroxide or of a salt thereof with H_2O and with at least:

(a) one sodium compound;

(b) one compound of a metal selected from the group comprising Al, Ga and mixtures thereof;

(c) one compound of an element selected from the group comprising Si, Ge and mixtures thereof,

the molar ratios, expressed as ratios of oxides, being comprised within the following ranges:

$SiO_2:Al_2O_3$ = from 20 to 120

$Na_2O:SiO_2$ = from 0.07 to 0.50

$(DEPP)_2O:SiO_2$ = from 0.05 to 0.50

$H_2O:Na_2O$ = from 50 to 600,

and wherein the resulting start mixture is heated, for crystallization purposes, at from 160° C. to 200° C. for at least 24 hours.

4,366,136

MOLDABLE PREPOLYMERS BASED ON ALKALI METAL SILICATES AND ALKALINE EARTH METAL SILICATES

Peter Kartschmaroff, Arlesheim; Ewald Forster, Allschwil, and Armin Schaffner, Basel, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 192,577, Sep. 30, 1980, abandoned, which is a continuation-in-part of Ser. No. 112,766, Jan. 17, 1980, abandoned, which is a continuation of Ser. No. 939,511, Sep. 5, 1978, abandoned. This application Nov. 4, 1981, Ser. No. 317,959

Claims priority, application Switzerland, Sep. 6, 1977, 10854/77

Int. Cl.³ C01B *33/24*

U.S. Cl. 423—331 6 Claims

1. A prepolymer which is the reaction product of an alkali metal silicate with a divalent to tetravalent metal oxide or with said metal oxide and an alkaline earth silicate, which product is moldable by heat and pressure, and which is obtained by a method wherein

(a) a mixture of solid alkali metal silicate and water or a mixture of solid alkali metal silicate and an aqueous solution of said silicate is combined and thoroughly homogenized at a temperature of 20° to 50° C. with a divalent, trivalent or tetravalent metal oxide or with said metal oxide and an alkaline earth metal silicate, the ratio of metal oxide to silicate being from 1:1 to 1:9, expressed in parts by weight of solids, the combined homogenized mixture having a water content of from 25 to 50% by weight, based on the total mixture;

(b) said homogenized mixture is allowed to stand at a temperature of 20° to 50° C. to permit formation of the prepolymer product to occur with the concomitant decrease in the water content of the mixture to 15 to 32% by weight, which prepolymer product is sufficiently tough and dry to permit comminution;

(c) said product is comminuted; and is then dried at a temperature of 90°–120° C. to reduce the water content of the prepolymer product to a level of 2 to 20% by weight.

4,366,137

PROCESS FOR PRODUCING SILICON

Gert-Wilhelm Lask, Berus, Fed. Rep. of Germany, assignor to International Minerals & Chemical Luxembourg Societe Anonyme, Luxembourg, Luxembourg

Filed Jul. 8, 1981, Ser. No. 281,352

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1980, 3032720

Int. Cl.³ C01B *33/02*

U.S. Cl. 423—350 7 Claims

1. A process for the production of silicon which comprises the steps of:

(a) hot-pressing briquettes from fine-grain quartz and coal to produce briquettes containing substantially 30 to 60% by weight carbon, the balance being substantially silicon dioxide;

(b) forming a bed of said briquettes and granular quartz in an electric furnace whereby the granular quartz fills interstices between said briquettes;

(c) heating said bed in said furnace to fuse said granular quartz at a temperature of about 1600° C. to effect an internal reaction between the quartz and carbon of the briquettes to transform the silicon dioxide of said briquettes to silicon carbide; and

(d) thereafter reacting said silicon carbide with the fused quartz to produce silicon and carbon monoxide at a temperature between 1800° C. and 2000° C.

4,366,138

CARBON BLACK USEFUL FOR PIGMENT FOR BLACK LACQUERS

Edith Eisenmenger, Offenbach; Richard Engel, Waldorf; Gerhard Kühner, Hanau; Reinhold Reck, Maintal; Hans Schaefer, Linsengericht, and Manfred Voll, Hanau, all of Fed. Rep. of Germany, assignors to Deutsche Gold- und Silberscheideanstalt Vormals Roessler, Fed. Rep. of Germany

Continuation of Ser. No. 87,139, Oct. 22, 1979, abandoned. This application Jun. 1, 1981, Ser. No. 268,560

Claims priority, application Fed. Rep. of Germany, Oct. 25, 1978, 2846405

Int. Cl.³ C01B *31/02, 31/00*

U.S. Cl. 423—445 4 Claims

1. An oxidized channel type carbon black within the MCC, medium color channel black, area comprising finely divided primary particles with an average diameter of 16 to 18 nm a content of volatiles of at least 15% and at maximum of 25% and having the following secondary characteristics:

Specific surface area (BET)	300–420 m^2/g
Oil absorption (stiff paste) conducted on carbon black powder	430–560 g/100 g
pH value	2–5
Nigrometer index	68–72

said black having been produced from gas carbon black by burning a carrier gas loaded with oil to produce a gas carbon black having a nigrometer index of 68 to 73 corresponding to a mean particle size in the range of 16 to 18 nm and the following secondary characteristics:

Specific surface area (BET)	185–240 m^2/g
Volatiles	4.5–7.5%
Oil absorption conducted on carbon black powder	640–740 g/100 g
pH	3–5

and thereafter subjecting said black to oxidation as an after treatment at a temperature not exceeding a maximal temperature of 300° C.

4,366,139

PROCESS FOR THE PRODUCTION OF WATER CONTAINING CARBON BLACK PREPARATIONS

Gerhard Kühner, Hanau; Wilhelm Berndt, Frankfurt; Lothar Rothbühr, Hürth, and Hans Wagner, Maintal, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Feb. 28, 1980, Ser. No. 125,711

Claims priority, application Fed. Rep. of Germany, Mar. 2, 1979, 2908202

Int. Cl.³ C01B *31/02;* C09C *1/48*

U.S. Cl. 423—449 5 Claims

1. A process for the production of water containing carbon black preparations comprising producing furnace blacks, lamp blacks or gas blacks in a continuous production process, separating said blacks from exhaust gases, continuously feeding the blacks to a pin shaft granulator used for the production of carbon black granules wherein the water is adjusted such that the preparations contain between 30 and 80% of water, thereby obtaining well dispersable preparations in the form of a non-dusting powder, beads, or liquid, and then packaging said preparations.

4,366,140

ANHYDROUS MAGNESIUM CHLORIDE FROM GRIGNARD REAGENTS

Karel Bujadoux, Lens; Jean-Marie Neyer, Bethune, and Jean-Pierre Houzeaux, Noeux lex Mines, all of France, assignors to Societe Chimique des Charbonnages-CdF Chimie, Bully-les Mines Mazingarbe, France

Continuation of Ser. No. 66,730, Aug. 15, 1979, abandoned, which is a division of Ser. No. 847,824, Nov. 2, 1977, Pat. No. 4,187,254. This application Mar. 30, 1981, Ser. No. 249,206
Claims priority, application France, Nov. 9, 1976, 76 33757
Int. Cl.³ C01F 5/32
U.S. Cl. 423—498 4 Claims

1. A process for the preparation of anhydrous magnesium halide comprising reacting an organomagnesium halide selected from the group consisting of (1) those having the formula:

$(RMgX)\ (MgX_2)_a\ (MgR_2)_b\ (MgH_2)_c$

wherein $0 \leqq a \leqq 0.45$, $b \leqq 0.15$, and $c \leqq 0.30$, X is a halogen and R is an organic radical, and (2) those having the formula:

$(RMgX)\ (MgX_2)_a\ [M'(OR')_n]_d$

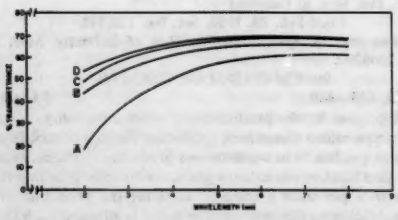
wherein R and a are defined above, R′ is a hydrocarbon radical, M′ is a metal selected from the group consisting of magnesium, beryllium, zinc, aluminum, and alkali metals, n is the valency of the metal M′, and $d \leqq 0.15$ with a compound of formula A-B wherein A is a halogen and B is either hydrogen or a halogen, under such conditions that the reaction is of the solid-gas type.

4,366,141

TREATMENT OF COARSE PARTICLE SIZE ZINC SULFIDE TO IMPROVE VISUAL AND INFRARED TRANSMISSION ON HOT-PRESSED ARTICLES

Brice E. Martin, and Alan R. Schwartz, both of Towanda, Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Mar. 27, 1981, Ser. No. 248,394
Int. Cl.³ C01B 17/00; G02B 5/22; B29D 11/00
U.S. Cl. 423—561 B 11 Claims



2. A method of preparing a densified zinc sulfide article comprising

mixing a coarse zinc sulfide powder having from about 5 to about 10 percent of particles greater than 7 microns and from about 25 to about 200 parts per million by weight of an alkali metal salt selected from the group consisting of RbBr, RbCl, RbI, CsBr, CsCl, CsI, and combinations thereof to form a treated coarse zinc sulfide powder blended mixture,

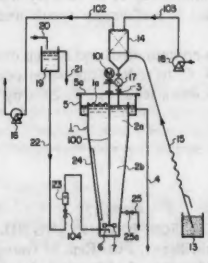
densifying said blended mixture by a combination of pressing and heating, said heating being done at a temperature above the melting point of said alkali metal salt and below the temperature of which the vapor pressure of said alkali metal salt is less than 10 millimeters of mercury, to form a densified zinc sulfide article having a density in the range from about 99 to about 100 percent of the theoretical density of zinc sulfide and having a visible, near visible, and infrared transmission greater than the visible, near visible, and infrared transmission of a densified zinc sulfide article prepared from said coarse zinc sulfide powder absent said alkali metal salt.

4,366,142

METHOD AND APPARATUS FOR THE PREPARATION OF SLAKED LIME SOLUTION

Sadao Kojima, 4-27-4, Mejirodai, Hachioji-shi, Tokyo; Masaaki Shimada, 15-1, Sanuka-machi 2-chome, Iwaki-shi, Fukushima-ken; Kunio Sakai, 4-1, Sagiuchi, Nishiki-machi, Iwaki-shi, Fukushima-ken, and Katuo Horie, 59, Odakatakamatsu, Nakosos-machi, Iwaki-shi, Fukushima-ken, all of Japan

Filed Mar. 26, 1980, Ser. No. 134,051
Claims priority, application Japan, Mar. 28, 1979, 54-36614; Sep. 21, 1979, 54-121665; Nov. 1, 1979, 54-141888; Nov. 1, 1979, 54-141889; Nov. 1, 1979, 54-141890
Int. Cl.³ C01F 11/02
U.S. Cl. 423—640 6 Claims



1. A method for the continuous preparation of an aqueous solution of slaked lime in a vessel, having a lower zone of an inverted truncated cone, and an upper cylindrical zone, said method comprising accumulating provisionally a layer of slaked lime solids on a closed bottom of said vessel; supplying fresh water from outside continuously at a constant feed rate in close proximity to and above said closed bottom wherein the average ascending water velocity measured at the top end of the vessel is less than 1 mm/sec.; agitating mechanically the solids and the fresh water at a same level or slightly higher than said closed bottom with a mechanical agitation means comprising a rotary agitator having a peripheral rotational speed maintained less than 1 meter per second; causing a slurry in the lower zone to move upwardly in hindered flow, without particulate entrainment in the upper zone, the hindered flow being produced by baffle means within the lower zone; and continuously removing from the top of said vessel a substantially clear and saturated aqueous solution of slaked lime by flowing the saturated calcium hydroxide solution to a weir located on the top of the upper zone.

5. A method for the continuous preparation of an aqueous solution of slaked lime in first and second vessels connected in series, each having a lower zone of an inverted truncated cone,

and an upper cylindrical zone, said method comprising accumulating provisionally a layer of slaked lime solids on a closed bottom of said first vessel; supplying fresh water from outside continuously at a constant feed rate in close proximity to and above said closed bottom of said first vessel wherein the average ascending water velocity measured at the top end of the vessel is less than 1 mm/sec.; agitating mechanically or fluidically the solids and the fresh water at a same level or slightly higher than said closed bottom of said first vessel; continuously removing from the top of said first vessel by flowing the saturated calcium hydroxide solution to a weir located on the top of the upper zone of said first vessel; feeding the calcium hydroxide solution removed from the first vessel to the bottom of the lower zone of the second vessel; and removing a substantially saturated clear calcium hydroxide solution from the upper zone of the second vessel.

4,366,143

ASSAY FOR THE FREE PORTION OF SUBSTANCES IN BIOLOGICAL FLUIDS

John E. Midgley, and Terence A. Wilkins, both of Amersham, Great Britain, assignors to Amersham International Public Limited Company, England

Filed Sep. 22, 1980, Ser. No. 189,942

Claims priority, application United Kingdom, Sep. 24, 1979, 7933072; Jan. 14, 1980, 8001124

Int. Cl.³ G01N *33/00*

U.S. Cl. 436—501 **16 Claims**

1. A method of determining the concentration of the free portion of a ligand present in a biological fluid which also contains a portion of the ligand bound to one or more natural binders for the ligand, the bound and free portions of the ligand being in equilibrium with one another, by:

(a) admixing a sample of the biological fluid with an amount of a labelled derivative of the ligand and an amount of an added specific binder for the ligand whereby the free portion of the ligand and the labelled derivative thereof compete for reaction with the specific binder and become bound thereto in proportions which depend on the amount of the free ligand portion present in the sample, the respective amounts of said derivative and said specific binder being insufficient to substantially affect said equilibrium and said labelled derivative being substantially non-reactive with said natural binders;

(b) effecting said reaction between the free ligand, the labelled derivative thereof and the specific binder;

(c) measuring the amount of the labelled derivative of the ligand bound to the specific binder; and

(d) using the measurement to determine the concentration of free ligand in the biological fluid.

4,366,144

IN VIVO METHOD OF DETERMINING LEUCOCYTE MIGRATORY ACTIVITY LEVELS

Lorne M. Golub, Smithtown, and Ralph S. Kaslick, New York, both of N.Y., assignors to Research Foundation of State Univ. of NY, Albany, N.Y.

Filed Jan. 31, 1980, Ser. No. 117,353

Int. Cl.³ A61K *49/00*; G01N *33/48, 33/50*

U.S. Cl. 424—9 **7 Claims**

1. An in vivo method of determining leucocyte migratory activity levels in mammalian subjects comprising the steps of:

a. Collecting the crevicular fluid from a predetermined gingival crevice after at least one predetermined time interval;

b. determining the volume of crevicular fluid in a predetermined gingival crevice generated in a predetermined time interval to provide a base level per unit time;

c. introducing a predetermined amount of a pharmaceutically acceptable chemotactic agent into a gingival crevice of the subject;

d. collecting the crevicular fluid from said gingival crevice after at least one predetermined time interval following the introduction of said chemotatic agent into the said gingival crevice;

e. measuring the volume of crevicular fluid collected and

f. determining the increase in volume of said crevicular fluid collected per unit time over the base level to provide a measure of the leucocyte migratory activity level.

4,366,145

SOFT GELATIN CAPSULE WITH A LIQUID ERGOT ALKALOID CENTER FILL SOLUTION AND METHOD OF PREPARATION

Samuel B. Stoopak, West Caldwell; Saul S. Kornblum, Springfield, and Allen L. Jacobs, Randolph, all of N.J., assignors to Sandoz, Inc., East Hanover, N.J.

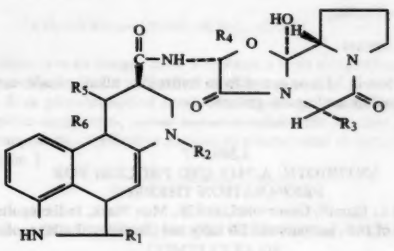
Filed Jun. 24, 1981, Ser. No. 277,980

Int. Cl.³ A61K *9/48, 31/48*

U.S. Cl. 424—37 **25 Claims**

1. A method of preparing a stable ergot alkaloid soft gelatin capsule which comprises the steps of dissolving a therapeutically effective amount of a ergot alkaloid of the formula

I



wherein

R_1 is hydrogen or halogen,

R_2 is hydrogen or C_{1-4}alkyl,

R_3 is isopropyl, sec.-butyl, isobutyl or benzyl,

R_4 is methyl, ethyl or isorpropyl, and either

R_5 is hydrogen and

R_6 is hydrogen or methoxy or

R_5 and R_6 together is an additional bond,

or mixtures thereof, in a pharmaceutically acceptable polar, hydrophilic soft gelatin capsule center fill solvent to prepare a liquid soft gelatin capsule center fill solution; and thereafter encapsulating the center fill solution obtained in a soft gelatin capsule shell before the percent of ergot alkaloid drops below 90% of the original therapeutically effective amount.

4,366,146

COMPOSITIONS AND METHOD FOR REDUCING ELUTION OF THERAPEUTIC AGENTS FROM TEETH

Robert W. H. Chang, Shoreview, Minn., assignor to Minnesota Mining & Manufacturing Co., St. Paul, Minn.

Division of Ser. No. 176,680, Aug. 11, 1980, Pat. No. 4,304,766, which is a division of Ser. No. 26,402, Apr. 2, 1979, Pat. No. 4,243,658, which is a continuation-in-part of Ser. No. 865,681, Dec. 29, 1977, abandoned. This application Sep. 18, 1981, Ser. No. 303,206

Int. Cl.³ A61K *7/18*

U.S. Cl. 424—52 **12 Claims**

12. A method of substantially reducing elution of a therapeutic agent previously applied to teeth which comprises the steps of

applying said therapeutic agent to teeth, and

applying a dentifrice composition to said treated teeth, wherein said dentifrice composition comprises (1) at least one ingredient selected from the group consisting of therapeutic agents, polishing agents, surfactants, flavoring agents, sweetening agents, thickening agents and humec-

tants that are substantially free from polyvalent metal atoms, and (2) at least 0.05% by weight of an anionic, non-polymeric, non-fluorinated, water-dispersible, membrane-forming material which, when applied to the surface of the teeth in an oral environment, forms a substantially continuous hydrophobic barrier thereon which substantially reduces the elution of said previously applied therapeutic agent from said teeth, and which, when at equilibrium with the complex has a formation constant in the range of about 0.5 to 8, said membrane-forming material having the formula R^1Z wherein R^1 is a nonionic aliphatic radical and Z is an anionic terminal group selected from

—COOM

=POOM

—$OPO(OM)_2$

—SO_2OM

—OSO_2OM

—$PS(SM)_2$

—PSSM

wherein M is selected from hydrogen, alkali metals, ammonium and amine groups.

4,366,147

ANTIBIOTIC A-7413 AND PROCESS FOR PREPARATION THEREOF

Robert L. Hamill, Greenwood, and W. Max Stark, Indianapolis, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation of Ser. No. 766,307, Feb. 7, 1977, abandoned, and a continuation-in-part of Ser. No. 655,670, Feb. 4, 1976, abandoned. This application Aug. 18, 1978, Ser. No. 934,922

Int. Cl.[2] A61K *35/00*

U.S. Cl. 424—117 **11 Claims**

1. A compound selected from the group consisting of (1) A-7413 factor A which is a white to light-yellow crystalline material when cystallized from ethanol; which is soluble in methancl, chloroform, dimethylformamide, dichloroethane and dimethyl sulfoxide; is slightly soluble in ethanol and aqueous ethanol; but is insoluble in acetone, benzene, carbon tetrachloride, dichloromethane, methyl isobutyl ketone, ethyl acetate, diethyl ether and water; which melts with decomposition at about 205°–212° C. and which has:

(A) an apparent molecular weight of approximately 1308, as determined by titration;

(B) an approximate elemental composition of 51.92 percent carbon, 5.25 percent hydrogen, 9.85 percent nitrogen, 22.63 percent oxygen, and 9.66 percent sulfur;

(C) a proposed approximate empirical formula of $C_{72}H_{87}N_{12}O_{23}S_5$;

(D) a specific rotation, $[\alpha]_D^{25}$, of +54.5° (c 2.0, $CHCl_3$);

(E) an infrared absorption spectrum in KBr disc with the following observable absorption maxima: 2.93 (shoulder), 2.98 (medium), 3.24 (weak), 3.38 (shoulder), 3.44 (medium), 3.53 (weak), 5.78 (weak), 6.03 (strong), 6.56 (strong), 6.79 (medium), 7.08 (medium), 7.27 (weak), 7.49 (weak), 7.65 (weak), 8.08 (medium), 8.41 (weak), 8.62 (weak), 8.81 (medium), 9.03 (weak), 9.35 (medium), 9.60 (medium), 9.92 (weak), 10.20 (weak), 12.05 (weak), 12.66 (weak), and 13.51 (weak) microns;

(F) an ultraviolet absorption spectrum with the following absorption maxima;

(a) in neutral, 95% aqueous ethanol: 215 nm ($E_{1cm}^{1\%}$=485); 260 nm (shoulder; $E_{1cm}^{1\%}$=240); 300 nm (shoulder; $E_{1cm}^{1\%}$=170); 358 nm (shoulder; $E_{1cm}^{1\%}$=112.5);

(b) in acidic ethanol: 217 nm ($E_{1cm}^{1\%}$=440); 265 nm ($E_{1cm}^{1\%}$=227.5); 293 nm ($E_{1cm}^{1\%}$=210); 358 nm ($E_{1cm}^{1\%}$=95);

(c) in basic methanol: 278 nm (shoulder; $E_{1cm}^{1\%}$=255); 408 nm ($E_{1cm}^{1\%}$=80);

(G) a titratable group with a pK_a value of 7.9 in 80% aqueous dimethylformamide;

(H) an amino-acid analysis, after acidic hydrolysis, which indicates the presence of ammonia, glycine, threonine, aspartic acid, and an as-yet-unidentified amino acid;

(I) a characteristic X-ray powder diffraction pattern (Cu^{++} radiation, 1.54505 λ, nickel filter) having the following interplanar spacings in angströms (d):

d	Relative Intensity
12.44	100
10.77	70
7.96	100
5.71	50
5.09	80
4.53	100
4.25	80
3.88	80
3.61	10
3.44	10
3.03	5

(J) the following R_f values in the paper-chromatographic systems indicated below, using *Bacillus subtilis* ATCC 6633 as a detection organism:

R_f Value	Solvent System
0.57	Butanol sat. with water
0.49	Methyl isobutyl ketone: butanol:water (25:21:4)
0.62	Methanol:water (1:1)
0.30	Water:methanol:acetone (12:3:1); adjusted to pH 10.5 with NH_4OH and then lowered to pH 7.5 with H_3PO_4
0.71	Methanol:0.1 N HCl (3:1)

(K) the following R_f values in the silica-gel thin-layer-chromatrographic systems indicated below, using *Bacillus subtilis* as a detection organism:

R_f Value	Solvent System
0.26	Chloroform:methanol (9:1)
0.23	Acetonitrile:water (9:1)

(L) an acid function capable of forming salts and ester derivatives;

(M) at least one hydroxyl group capable of esterification; and

(N) the ability to form derivatives with thiol carboxylic acids;

(2) the methyl ester derivative of A-7413 factor A, which is soluble in the same solvents as is A-7413 factor A, which has an approximate empirical formula of $C_{73}H_{89}N_{12}O_{23}S_5$, an ultraviolet absorption spectrum as given above in section F, an amino-acid content as given above in section H, and an infrared absorption spectrum as shown in FIG. 4 of the drawings; (3) the acetyl- and triacetyl-ester derivatives of A-7413 factor A, each of which is soluble in the same solvents as is A-7413 factor A, each of which has an ultraviolet absorption spectrum as given above in section F, an amino-acid content as given above in section H, and an electrometric titration as given above in section G, the acetyl-ester derivative having an approximate empirical formula of $C_{74}H_{89}N_{12}O_{24}S_5$ and an infra-

red absorption spectrum as shown in FIG. 5 of the drawings and the triacetyl-ester derivative having an approximate empirical formula of $C_{78}H_{93}N_{12}O_{26}S_5$ and an infrared absorption spectrum as shown in FIG. 6 of the drawings; and (4) the physiologically-acceptable salts thereof.

4,366,148

USE OF SOMATOSTATIN IN THE PREVENTION AND CURE OF VASCULAR, MEMBRANE, OR ORGAN LESIONS

Sandor Szabo, Brookline, Mass., and Klaus H. Usadel, Frankfurt am Main, Fed. Rep. of Germany, assignors to Brigham and Women's Hospital, Boston, Mass.

Filed Jun. 2, 1981, Ser. No. 269,734

Int. Cl.³ A61K *37/00*; C07C *103/52*

U.S. Cl. 424—177 **19 Claims**

1. A method of treating hepatic vascular lesions, comprising: administering to a human or other mammal suspected of having one or more hepatic vascular lesions an amount of somatostatin sufficient to reduce the number or severity of said lesions.

4,366,149

ANTITUMOR ANTHRACYCLINE GLYCOSIDES, THEIR PREPARATION, INTERMEDIATES THEREFOR, AND COMPOSITIONS AND USE THEREOF

Alberto Bargiotti, Via Donati, 8, Milan; Giuseppe Cassinelli, Via G. Matteotti, 13, Voghera (Pavia); Sergio Penco, Via Crimea, 13, Milan; Federico Arcamone, Via 4 Novembre, 26, Nerviano (Milan), and Annamaria Casazza, Via Guido Reni, 26, Milan, all of Italy

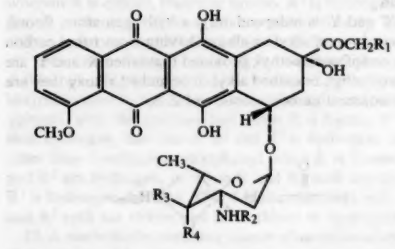
Filed Oct. 29, 1981, Ser. No. 316,057

Claims priority, application United Kingdom, No. 1, 1980, 8035204

Int. Cl.³ A61K *31/70*; C07H *5/06, 15/24*

U.S. Cl. 424—180 **10 Claims**

1. An anthracycline glycoside of the formula I:



(I)

wherein R_1 is hydrogen or hydroxy; R_2 is hydrogen or trifluoroacetyl; one of R_3 and R_4 is amino or trifluoroacetylamine and the other of R_3 and R_4 is hydrogen and pharmaceutically acceptable acid addition salts thereof.

10. A method of treating P388 ascitic leukemia comprising administering to a mammal afflicted therewith a therapeutically effective amount of a compound as claimed in claim 1.

4,366,150

SOIL DISINFECTANTS AND METHOD OF USE

Yoshimi Yamada, Hyogo; Tadashi Ooishi, Sonehigashi; Toshiro Kato, and Kunio Mukai, both of Hyogo, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Nov. 26, 1980, Ser. No. 210,618

Claims priority, application Japan, Nov. 29, 1979, 54-155061; Apr. 30, 1980, 55-58477

Int. Cl.³ A01N *57/22*

U.S. Cl. 424—199 **22 Claims**

1. A soil disinfectant composition for preventing and controlling diseases caused by pathogenic fungi living in soil, which comprises an effective amount of at least one salt of phenylphosphinic acid with a saturated heterocyclic amine as an active ingredient, and at least one inert carrier or diluent.

12. A method for preventing and controlling diseases caused by pathogenic fungi living in soil, which comprises applying an effective amount of at least one salt of phenylphosphinic acid with a saturated heterocyclic amine where the pathogenic fungi are living.

4,366,151

OXYALKYLATED FATTY ACIDS AND THEIR USE AS SOLUBILIZERS

Knut Oppenlaender, Ludwigshafen; Heinz Krapf, Gruenstadt, and Siegfried Lang, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 124,989, Feb. 27, 1980, abandoned. This application Aug. 12, 1981, Ser. No. 292,166

Int. Cl.³ A61K *31/56*; C09F *5/08*

U.S. Cl. 424—238 **4 Claims**

1. The product of the reaction of a monohydroxy-fatty acid of the formula I

$$CH_3—(CH_2)_m—CHOH—(CH_2)_n—COOH \quad \text{I}$$

where m is an integer from 4 to 9 and n is an integer from 6 to 11, with from 12 to 20 moles of ethylene oxide.

3. A pharmaceutical product comprising a water-insoluble active component, water and as a solubilizer for said active component, an effective amount of a compound of formula I of claim 1.

4,366,152

COMBATTING FUNGI WITH METAL SALT COMPLEXES OF 1-PHENYL-2-(1,2,4-TRIAZOL-1-YL)-ETHANES

Wolfgang Krämer; Helmut Timmler; Karl H. Büchel, all of Wuppertal; Wilhelm Brandes, Leichlingen; Paul-Ernst Frohberger, and Hans Scheinpflug, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

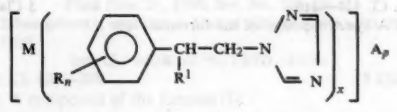
Filed May 25, 1978, Ser. No. 909,602

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1977, 2725214

Int. Cl.³ A01N *55/02, 55/04*; C07D *249/08*; C07F *1/08*

U.S. Cl. 424—245 **10 Claims**

1. A metal salt complex of a 1-phenyl-2-(1,2,4-triazol-1-yl)-ethane of the formula



in which

R is halogen, nitro, cyano, alkyl with 1 to 4 carbon atoms, alkylsulphonyl with 1 to 4 carbon atoms, alkoxy with 1 or 2 carbon atoms, alkylthio with 1 to 2 carbon atoms, halogenoalkyl with up to 4 carbon atoms and up to 5 halogen atoms, phenyl, phenoxy, or phenyl or phenoxy carrying at least one substituent selected from halogen, cyano, nitro and halogenoalkyl with up to 2 carbon atoms and up to 3 independent halogen atoms;

R^1 is $—O—R^2$, $—S(O)_m—R^3$ or $—O—CO—R^4$;

R^2 is alkyl, alkenyl or alkynyl each with up to 4 carbon atoms; cycloalkyl with 5 to 7 carbon atoms; phenyl, naphthyl, or phenylalkyl, naphthylalkyl, phenylalkenyl or naphthylalkenyl each with up to 4 carbon atoms in the alkyl or alkenyl part, the phenyl or naphthyl moieties optionally being substituted by halogen, cyano, nitro, amino, alkyl with 1 to 4

carbon atoms, halogenoalkyl with up to 2 carbon atoms and up to 3 independent halogen atoms, phenoxy or halophenoxy;

R^3 is hydrogen; alkyl, alkenyl or alkynyl each with up to 4 carbon atoms; cycloalkyl with 5 to 7 carbon atoms; phenyl, naphthyl, phenylalkyl, naphthylalkyl, phenylalkenyl or naphthylalkenyl, each of the four last-mentioned groups having up to 4 carbon atoms in the alkyl or alkenyl part, the phenyl or naphthyl moieties optionally being substituted by halogen, cyano, nitro, amino, alkyl with 1 to 4 carbon atoms, halogenoalkyl with up to 2 carbon atoms and up to 3 independent halogen atoms, phenoxy or halophenoxy;

R^4 is alkyl, alkenyl or alkynyl each with up to 4 carbon atoms; cycloalkyl with 5 to 7 carbon atoms; phenyl, naphthyl, or phenylalkyl, naphthylalkyl, phenylalkenyl, or naphthylalkenyl, each having up to 4 carbon atoms in the alkyl or alkenyl part, the phenyl or naphthyl moieties optionally being substituted by halogen, cyano, nitro, amino, alkyl with 1 to 4 carbon atoms, halogenoalkyl with up to 2 carbon atoms and up to 3 independent halogen atoms, phenoxy or halophenoxy; halogenoalkyl with 1 to 2 carbon atoms and 1 to 5 halogen atoms; phenoxyalkyl which has 1 or 2 carbon atoms in the alkyl part and optionally substituted in the phenyl part by halogen, amino, cyano, nitro or alkyl with 1 to 2 carbon atoms; amino; alkylamino, dialkylamino or alkyl-alkylcarbonylamino each with 1 to 4 carbon atoms in each alkyl part; or phenylamino which is optionally substituted by halogen, nitro and cyano;

M is copper, zinc, manganese, magnesium, tin, iron or nickel,

A is an anion of an inorganic acid,

n represents 0, 1, 2, 3, 4 or 5,

m represents 0, 1 or 2,

p represents 1, 2, 3, 4, 5 or 6, and

x represents 1, 2, 3 or 4.

4,366,153

CEPHEM COMPOUNDS

Takao Takaya, Kawanishi; Takashi Masugi, Toyonaka; Hisashi Takasugi, Osaka, and Hiromu Kochi, Sakai, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

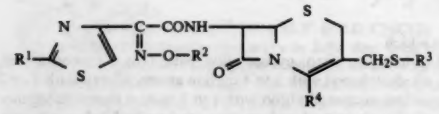
Continuation-in-part of Ser. No. 71,302, Aug. 30, 1979, which is a continuation-in-part of Ser. No. 941,660, Sep. 12, 1978, Pat. No. 4,220,761. This application Feb. 20, 1980, Ser. No. 123,165

Claims priority, application United Kingdom, Sep. 11, 1978, 36399/78; Mar. 13, 1979, 7908799; Mar. 26, 1979, 7910499

Int. Cl.³ A61K *31/545*; C07D *501/56*

U.S. Cl. 424—246 **3 Claims**

1. A syn compound of the formula:



wherein

R^1 is amino,

R^2 is cyclopentyl,

R^3 is hydroxy(lower)alkyltetrazolyl,

and R^4 is carboxy,

and its pharmaceutically acceptable salt.

3. A pharmaceutically antibacterial composition comprising a compound of claim 1 in association with a pharmaceutically acceptable, substantially non-toxic carrier or excipient.

4,366,154

TROPYL DERIVATIVES

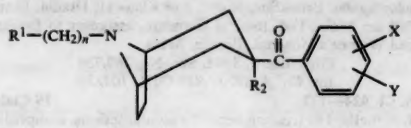
John C. Tomesch, Succasunna, N.J., assignor to Sandoz, Inc., East Hanover, N.J.

Filed Nov. 9, 1981, Ser. No. 319,254

Int. Cl.³ A61K *31/46*; C07D *451/02, 513/14*; A61K *31/54*

U.S. Cl. 424—247 **19 Claims**

1. A compound which is a free base of the formula:



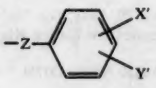
wherein

each of X and Y is independently, a hydrogen atom, fluoro, chloro or bromo, alkyl or alkoxy having from 1 to 4 carbon atoms, or trifluoromethyl, provided that when X and Y are trifluoromethyl, branched alkyl, or branched alkoxy, they are not on adjacent carbon atoms;

n is a whole number of from 1 to 4;

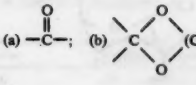
R^1 is of type;

(a) a radical of the formula:



wherein

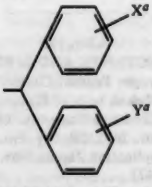
each of X′ and Y′ is independently, a hydrogen atom, fluoro, chloro or bromo; alkyl or alkoxy having from 1 to 4 carbon atoms, or trifluoromethyl, provided that when X′ and Y′ are trifluoromethyl, branched alkyl or branched alkoxy they are not on adjacent carbon atoms, and Z is



(c) —O—; or (d) a direct bond,

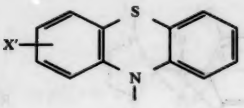
wherein m is 2 or 3;

(b) a radical of the formula:



in which X^a and Y^a are, independently, a hydrogen atom or fluoro; or

(c) a radical of the formula:



in which
X' is defined above; and,
R^2 is
(a) a hydrogen atom;
(b) —OH; or
(c) —O—$Si(CH_3)_3$; or a non-toxic acid addition salt thereof.

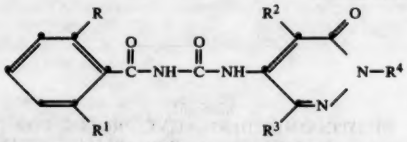
18. A method of tranquillizing a mammal comprising administering to a mammal a anti-psychotic-effective amount of a compound of claim 1.

4,366,155
1-BENZOYL-3-(6-OXOPYRIDAZINYL)UREAS, COMPOSITIONS, AND INSECTICIDAL METHOD

Emily J. Canada, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Mar. 30, 1981, Ser. No. 249,054
Int. Cl.³ C07D *237/22*; A01N *43/58*
U.S. Cl. 424—250 25 Claims

1. A compound having the structural formula:



wherein R is chloro, fluoro or bromo, R^1 is hydrogen, chloro, fluoro or bromo, R^2 and R^3 are independently hydrogen, chloro or bromo and R^4 is selected from the group consisting of branched alkyl, cycloalkyl, 4-chlorophenyl, 3,5-dichlorophenyl, 4-bromophenyl, 3-trifluoromethylphenyl 3,5-bis(trifluoromethyl)phenyl, 4-chlorobenzyl and 4-methoxyphenyl, with the provisos that when R is fluoro, R^1 is other than hydrogen; that one of R^2 and R^3 is hydrogen; that R^4 is other than 3-trifluoromethylphenyl when R is bromo and R^2 and R^3 are hydrogen, or when R and R^3 both are chloro and R^1 is hydrogen; and that R^4 is 4-methoxyphenyl only when R and R^1 both are chloro and R^2 is chloro or hydrogen.

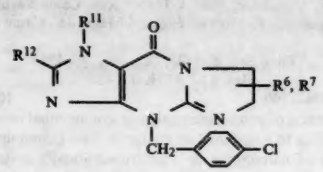
17. A method of controlling insects of an order selected from Coleoptera and Lepidoptera which comprises applying to the locus of the insect infestation an insecticidally effective amount of a compound of claim 1.

4,366,156
ANTIALLERGIC METHODS USING DIAZAHETEROCYCLOPURINES

Davis L. Temple, Jr., Evansville, Ind., assignor to Mead Johnson & Company, Evansville, Ind.

Division of Ser. No. 17,771, Mar. 5, 1979, Pat. No. 4,298,734, which is a continuation-in-part of Ser. No. 869,203, Jan. 13, 1978, abandoned, which is a continuation-in-part of Ser. No. 768,291, Feb. 14, 1977, abandoned. This application Nov. 24, 1980, Ser. No. 209,791
Int. Cl.³ A61K *31/505*, *31/52*
U.S. Cl. 424—251 20 Claims

1. The method for inhibiting the immediate hypersensitivity reaction in a mammal sensitive to allergic reaction which comprises administering to said mammal a non-toxic effective hypersensitive reaction inhibiting dose of a compound selected from the group consisting of those having the following formula and the pharmaceutically acceptable acid addition salts thereof



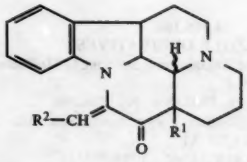
wherein R^6, R^7, R^{11} and R^{12} are selected from the group consisting of hydrogen and methyl.

4,366,157
NOVEL POLYCYCLIC INDOLE DERIVATIVES

Keiichi Ono, Osaka; Hajime Kawakami, Takarazuka, and Junki Katsube, Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Jul. 27, 1981, Ser. No. 287,039
Claims priority, application Japan, Aug. 6, 1980, 55-108495
Int. Cl.³ C07D *46/00*
U.S. Cl. 424—256 10 Claims

1. A compound of the formula:



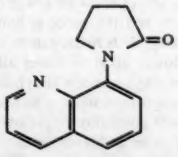
wherein R^1 is a C_1–C_6 alkyl group and R^2 is phenyl, pyridyl, thienyl, furyl, biphenylyl or naphthyl optionally substituted with 1 to 3 substituents selected from the group consisting of halogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, trifluoromethyl, hydroxyl, amino and nitro.

4,366,158
1-(8-QUINOLYL)-2-PYRROLIDONE AND ITS PHARMACEUTICAL COMPOSITIONS

Gordon L. Hodgson, Jr., Durham, N.C., assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.

Filed Nov. 24, 1980, Ser. No. 209,426
Claims priority, application United Kingdom, Nov. 30, 1979, 7941409
Int. Cl.³ A01K *31/47*; C07D *419/04*
U.S. Cl. 424—258 5 Claims

1. A compound of the formula (I):



(I)

4. A pharmaceutical formulation comprising an anti-inflammatory, anti-pyretic or analgesic effective ammount of a compound selected from the group consisting of 1-(8-quinolyl)-2-pyrrolidinone and pharmaceutically acceptable acid addition salts thereof together with a pharmaceutically acceptable carrier therefor.

4,366,159

NALBUPHINE-NARCOTIC ANALGESIC COMPOSITION AND METHOD OF PRODUCING ANALGESIA

Michael R. Magruder, 2035-A Taylor Run, Camp Springs, Md. 20335, assignor to Michael Richard Magruder, Camp Springs, Md.

Filed Sep. 8, 1981, Ser. No. 300,394
Int. Cl.[3] A61K *31/485*
U.S. Cl. 424—260 10 Claims

1. A method of producing analgesia in a mammal comprising administering to a mammal an analgesic dose containing about 1–100 mg of nalbuphine or a pharmaceutically suitable salt thereof and an analgesic dose containing a narcotic analgesic selected from:

(a) about 1–100 mg of morphine or a pharmaceutically suitable salt thereof;

(b) about 0.1–20 mg of oxymorphone or a pharmaceutically suitable salt thereof;

(c) about 0.5–50 mg of oxycodone or a pharmaceutically suitable salt thereof; or

(d) about 0.1–20 mg of hydromorphone or a pharmaceutically suitable salt thereof.

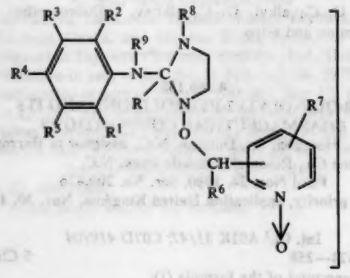
4,366,160

IMIDAZOLE DERIVATIVES

Henri Ramuz, Birsfelden, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Aug. 26, 1981, Ser. No. 296,596
Claims priority, application Switzerland, Sep. 10, 1980, 6798/80; Jun. 24, 1981, 4175/81
Int. Cl.[3] A61K *31/44;* C07D *401/12*
U.S. Cl. 424—263 24 Claims

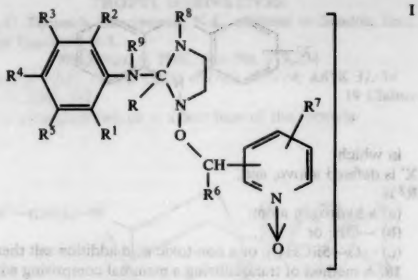
1. A compound of the formula



I

wherein R^1, R^2 and R^3, independently, are hydrogen, halogen trifluoromethyl, nitro, lower alkyl or lower alkylthio; one of R^4 and R^5 is hydrogen and the other is hydrogen, halogen, hydroxy or lower alkoxy; R^6 is hydrogen or lower alkyl; R^7 is hydrogen, hydroxy, lower alkyl or lower alkoxy; and either R^8 is hydrogen, lower alkyl, lower alkenyl, aryl-(lower alkyl) or acyl and R^9 taken together with R is an additional bond, or R^9 is lower alkyl, lower alkenyl or aryl-(lower alkyl) and R^8 taken together with R is an additional bond; provided that R^4 or R^5 is not hydroxy when R^7 is lower alkoxy and/or R^8 is acyl, and that R^7 is not hydroxy when R^4 or R^5 is lower alkoxy and/or R^8 is acyl, or a pharmaceutically acceptable acid addition salt thereof.

23. A method of controlling or preventing pain which comprises administering an effective amount of a compound of the formula



I

wherein R^1, R^2 and R^3, independently, are hydrogen, halogen, trifluoromethyl, nitro, lower alkyl or lower alkylthio; one of R^4 and R^5 is hydrogen and the other is hydrogen, halogen, hydroxy or lower alkoxy; R^6 is hydrogen or lower alkyl; R^7 is hydrogen, hydroxy, lower alkyl or lower alkoxy; and either R^8 is hydrogen, lower alkyl, lower alkenyl, aryl-(lower alkyl) or acyl and R^9 taken together with R is an additional bond, or R^9 is lower alkyl, lower alkenyl or aryl-(lower alkyl) and R^8 taken together with R is an additional bond; provided that R^4 or R^5 is not hydroxy when R^7 is lower alkoxy and/or R^8 is acyl, and that R^7 is not hydroxy when R^4 or R^5 is lower alkoxy and/or R^8 is acyl, or a pharmaceutically acceptable acid addition salt thereof.

4,366,161

NICOTINAMIDE DERIVATIVE, PROCESS FOR PREPARING THE SAME AND PHARMACEUTICAL COMPOSITION CONTAINING THE SAME

Takashi Mori, Ohizumigakuenmachi; Sakae Takaku, Ageo; Fumiaki Matsuura, Tokyo; Yasushi Murakami, Tokyo; Yukifumi Noda, Tokyo; Tamotsu Yamazaki; Tomohiro Neichi, both of Tokorozawa; Hiroshi Nakakimura, Kamakura; Shigeyuki Kataoka, Saitama; Takashi Matsuno, Omiya; Shunichi Hata, Yokohama, and Shigeru Takanashi, Asaka, all of Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 17, 1980, Ser. No. 207,443
Claims priority, application Japan, Nov. 22, 1979, 54-150674
Int. Cl.[3] C07D *213/56;* A61K *31/455*
U.S. Cl. 424—266 14 Claims

1. 1,2-Bis(nicotinamido)propane and its pharmaceutically acceptable salt.

9. A method for treating a vascular disease which comprises administering to a patient in need of said therapy an amount effective for said therapy of a compound according to claim 1.

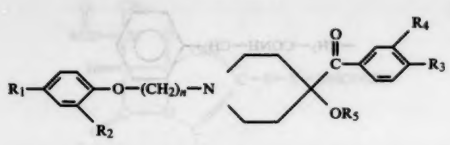
4,366,162

ARYL ETHERS OF N-ALKYL-PIPERIDINES AND ACID ADDITION SALTS THEREOF

Anders K. K. Björk, Bjärred; Aina L. Abramo, Malmö, and Bengt E. S. Kjellberg, Staffanstorp, all of Sweden, assignors to AB Ferrosan, Malmö, Sweden

Filed Oct. 25, 1978, Ser. No. 954,340
Claims priority, application United Kingdom, Nov. 9, 1977, 46680/77
Int. Cl.[3] A61K *31/445;* C07D *211/50*
U.S. Cl. 424—267 14 Claims

1. A compound of the general formula



wherein R_1 is lower alkanoyl; R_2 is lower alkoxy; R_3 and R_4 independently are hydrogen, F, Cl and Br, $—CF_3$, lower alkyl or lower alkoxy; R_5 is hydrogen or an acyl group with 2–19 carbon atoms; and n=3 or 4, and pharmaceutically-acceptable acid addition salts thereof.

13. A method of treating human beings suffering from mental disorders which comprises administering a compound of formula I as defined in claim **1**.

14. A method of treating aggressive behaviour in mammals which comprises administering a compound of formula I as defined in claim **1**.

4,366,163

ANTI-HYPERTENSIVE CHROMANOL DERIVATIVES

John M. Evans, Roydon; Graham A. Showell, and Charles S. Fake, both of Harlow, all of England, assignors to Beecham Group Limited, England

Filed Sep. 12, 1980, Ser. No. 186,709

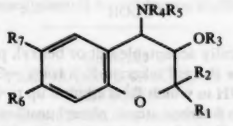
Claims priority, application United Kingdom, Sep. 28, 1979, 7933721; May 3, 1980, 8014932

The portion of the term of this patent subsequent to Dec. 14, 1999, has been disclaimed.

Int. Cl.³ A61K *31/445*; C07D *405/04*

U.S. Cl. 424—267 **10 Claims**

1. A compound of the formula:



or a pharmaceutically acceptable salt or ester thereof, wherein

R_1 is hydrogen or lower alkyl;

R_2 is hydrogen or lower alkyl;

R_3 is hydrogen or lower alkyl;

R_4 is hydrogen or lower alkyl;

R_5 is lower alkyl or alkyl of 3 to 5 carbon atoms terminally substituted by chlorine;

or R_4 and R_5 are joined so that together with the nitrogen atom to which they are attacned they form a 6- or 7-membered saturated heterocyclic ring containing said nitrogen atom as the sole hetero atom or a 5- membered saturated heterocyclic ring optionally containing an oxygen or sulphur atom as an additional hetero atom;

R_6 is amino, carboxylic acylamino of up to 3 carbon atoms, alkylamino of up to 3 carbon atoms, or dialkylamino of up to 3 carbon atoms in each alkyl moiety;

R_7 is nitro or cyano;

and

the NR_4R_5 and OR_3 groups are trans.

10. A method of effecting an anti-hypertensive response in a human or other animal which comprises administering thereto an effective amount of a compound according to claim **1**.

4,366,164

AMINE DERIVATIVES

John W. Clitherow; Barry Price, both of Hertford; John Bradshaw, and Michael Martin-Smith, both of Ware, all of England, assignors to Glaxo Group Limited, London, England

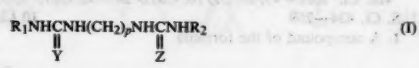
Division of Ser. No. 95,065, Nov. 16, 1979, Pat. No. 4,264,614. This application Dec. 5, 1980, Ser. No. 213,407

Claims priority, application United Kingdom, Nov. 16, 1978, 44777/78

Int. Cl.³ A61K *31/38*; C07D *333/38*

U.S. Cl. 424—267 **12 Claims**

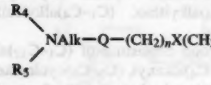
1. Compounds of the general formula (I)



or a physiologically acceptable salt or hydrate thereof, in which

Y and Z, which may be the same or different, each represent oxygen, sulphur, $=CHNO_2$ or $=NR_3$ where R_3 is hydrogen, nitro, cyano, lower alkyl, aryl, alkylsulphonyl or arylsulphonyl; p has a value from 2 to 12;

R_1 represents



in which

R_4 and R_5, which may be the same or different, each represent hydrogen, lower alkyl, cycloalkyl, lower alkenyl, aralkyl or lower alkyl interrupted by an oxygen atom or a group $>N-R_6$ in which R_6 represents hydrogen or lower alkyl, or R_4 and R_5 together with the nitrogen atom to which they are attached form a 5 to 7-membered saturated alkyleneimine ring; Q represents a thiophen ring in which incorporation into the rest of the molecule is through bonds at the 2 and 5 positions;

X represents $—CH_2—$, —O— or —S—;

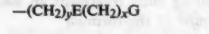
n represents zero or 1;

m represents 2, 3 or 4; and

Alk represents a straight chain alkylene group of 1 to 3 carbon atoms;

and

R_2 represents lower alkyl or the group



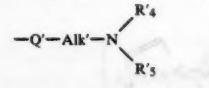
in which

y represents 2, 3 or 4, or can additionally represent zero or 1 when E is a $—CH_2—$ group;

x represents zero, 1 or 2;

E represents $—CH_2—$, —O— or —S—; and

G represents a monocyclic 5 or 6 membered carbocyclic aromatic ring, or a thiophen or furan ring or G represents the group



where Q' represents a thiophen ring in which incorporation into the rest of the molecule is through bonds at the 2 and 5 positions;

Alk' represents any of the groups defined for Alk; and R'_4 and R'_5, which may be the same or different, represent any of the groups defined for R_4 or R_5.

12. A method of treating a condition mediated through histamine H_2-receptors which comprises administering to a

patient as effective amount of a compound as defined in claim 1 to relieve said condition.

4,366,165

1 AND 4-ARYLCYANOALKYL-1,2,4-TRIAZOLES AND FUNGICIDAL USE

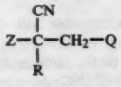
George A. Miller, Maple Glen, and Hak-Foon Chan, Doylestown, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 798,286, May 19, 1977, abandoned. This application Feb. 11, 1981, Ser. No. 233,366

Int. Cl.³ A01N *43/64, 59/16;* C07D *249/08;* C07F *3/06*

U.S. Cl. 424—269 **10 Claims**

1. A compound of the formula



wherein

Z is unsubstituted phenyl, or phenyl substituted with up to three substituents selected from the group consisting of halogen, nitro, trihalomethyl, cyano, $(C_1–C_4)$alkyl, $(C_1–C_4)$alkoxy, $(C_1–C_4)$alkylthio, $(C_1–C_4)$alkylsulfinyl and $(C_1–C_4)$alkylsulfonyl,

R is selected from the group consisting of $(C_1–C_{12})$alkyl, $(C_5–C_7)$cycloalkyl, $(C_2–C_4)$alkenyl, $(C_5–C_6)$cycloalkenyl, $(C_2–C_4)$alkynyl, unsubstituted phenyl, benzyl or phenethyl, or phenyl, benzyl or phenethyl substituted with up to two halogen atoms;

Q is an unsubstituted 1- or 4-(1,2,4-triazole)

and the agronomically acceptable enantiomorphs, acid addition salts and metal salt complexes thereof.

4,366,166

FILARICIDAL 2-NITROIMIDAZOLE COMPOUNDS

Werner Hofheinz, Bottmingen, and Harro Stohler, Binningen, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

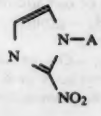
Filed May 14, 1981, Ser. No. 263,612

Claims priority, application Switzerland, May 23, 1980, 4057/80

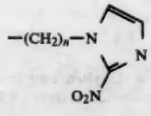
Int. Cl.³ A61K *31/415;* C07D *233/91*

U.S. Cl. 424—273 R **1 Claim**

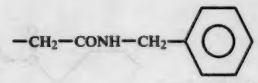
1. A method for the treatment of filariasis which comprises administering to a host requiring such treatment an amount effective therefor of a compound of the formula



wherein A is one of the groups



$—C(R^3)=C(R^1)$ (R^2), —CHBr—CH_2Br or —CH_2—$CCl=CH_2$ or R^4; n is 1,2,3 or 4; R^1 and R^2 are hydrogen or C_{1-3}-alkyl and R^3 is hydrogen C_{1-3}-alkyl, chlorine or bromine and R^4 is —CH_2—CH_2OH, —CH_2—CHOH—CH_2OCH_3, —CH_2—CHOH—CH_2OH or



4,366,167

β-LACTAM ANTIBIOTICS, PREPARATION AND USE

David F. Corbett, Dorking, England, assignor to Beecham Group Limited, England

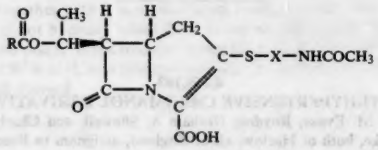
Filed Mar. 30, 1979, Ser. No. 25,556

Claims priority, application United Kingdom, Apr. 28, 1978, 16886/78; May 6, 1978, 18100/78

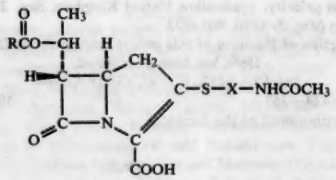
Int. Cl.³ A61K *31/40;* C07D *487/04*

U.S. Cl. 424—274 **54 Claims**

1. A compound of the formula:

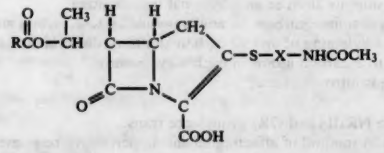


or



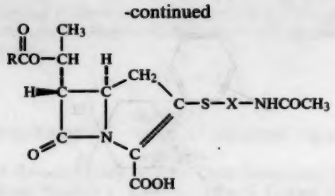
a pharmaceutically acceptable salt or benzyl, p-nitrobenzyl or phthalidyl ester thereof wherein X is trans —CH=CH— and R is R^1 or R^1NH in which R^1 is alkyl of up to 6 carbon atoms, alkenyl of up to 6 carbon atoms, phenyl unsubstituted or mono-substituted by alkyl of up to 3 carbon atoms, alkoxyl of up to 3 carbon atoms, chlorine or fluorine, or alkyl of up to 6 carbon atoms mono-substituted by phenyl which is unsubstituted or mono-substituted by alkyl of up to 3 carbon atoms, alkoxyl of up to 3 carbon atoms, chlorine or fluorine, or by phenoxy which is unsubstituted or mono-substituted by alkyl of up to 3 carbon atoms, alkoxyl of up to 3 carbon atoms, chlorine or fluorine.

10. A pharmaceutical composition useful for treating bacterial infections in humans, domestic animals and cattle which comprises an antibacterially effective amount of a compound of the formula



or

-continued



a pharmaceutically acceptable salt or benzyl, p-nitrobenzyl or phthalidyl ester thereof wherein X is trans —CH=CH— and R is R^1 or R^1NH in which R^1 is alkyl of up to 6 carbon atoms, alkenyl of up to 6 carbon atoms, phenyl unsubstituted or mono-substituted by alkyl of up to 3 carbon atoms, alkoxyl of up to 3 carbon atoms, chlorine or fluorine, or alkyl of up to 6 carbon atoms mono-substituted by phenyl which is unsubstituted or mono-substituted by alkyl of up to 3 carbon atoms, alkoxyl of up to 3 carbon atoms, chlorine or fluorine, or by phenoxy which is unsubstituted or mono-substituted by alkyl of up to 3 carbon atoms, alkoxyl of up to 3 carbon atoms, chlorine or fluorine, in combination with a pharmaceutically acceptable carrier.

4,366,168

ANTICOCCIDIAL COMBINATIONS

Albert J. Clinton, deceased, late of Indianapolis, Ind. (by American Fletcher National Bank and Trust Company, Administrator), and George O. P. O'Doherty, Greenfield, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Sep. 21, 1981, Ser. No. 304,403
Int. Cl.³ A61K *31/35, 31/135*
U.S. Cl. 424—283 **17 Claims**

1. A combination useful in the treatment of coccidiosis in animals comprising in synergistic amounts from about 1 to about 10 parts by weight of a polyether antibiotic and about 10 to about 1 part by weight of a benzenamine selected from 2,4-dinitro-N-[4-(trifluoromethoxy)phenyl]-6-(trifluoromethyl)benzenamine; 2,4-dinitro-N-[4-(1,1,2,2-tetrafluoroethoxy)-phenyl]-6-(trifluoromethyl)benzenamine or 2,4-dinitro-N-[4-(pentafluoroethoxy)phenyl]-6-(trifluoromethyl)benzenamine.

4,366,169

USE OF PERFLUOROCARBONS AS WOUND TREATMENT

David C. White, Concordville, Pa., assignor to Sun Tech, Inc., Philadelphia, Pa.

Continuation-in-part of Ser. No. 52,041, Jun. 25, 1979, abandoned. This application Jan. 26, 1981, Ser. No. 228,642
Int. Cl.³ A61K *31/02, 31/025, 31/34*
U.S. Cl. 424—285 **18 Claims**

1. A method of treating a victim having a wound the normal healing of which is accelerated by exposure to oxygen, which comprises contacting the wound with an effective amount of a liquid containing molecular oxygen and comprising a substantially fluorinated carbon material or a mono or dibrominated derivative thereof having an ability to transport oxygen, the contacting being by means other than the blood stream.

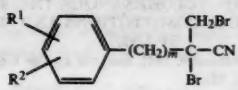
4,366,170

1,2-DIBROMO-2-CYANO-2-(ARYL)ETHANE(PROPANE) ANTIMICROBIAL COMPOUNDS

John E. Engelhart, Westfield; Marshall R. Angeles, Scotchplains, both of N.J., and Michael J. D'Errico, Flossmoor, Ill., assignors to Merck & Co., Inc., Rahway, N.J.

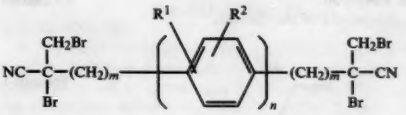
Filed Dec. 22, 1981, Ser. No. 333,275
Int. Cl.³ A01N *37/34;* **C07C** *121/66, 121/75*
U.S. Cl. 424—304 **23 Claims**

1. A compound of the formula:



(Ia)

or



(Ib)

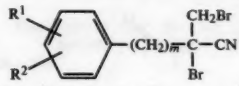
where

R^1 and R^2 are hydrogen; halo; C_{1-4}alkyl; C_{1-4}alkoxy; hydroxy; nitro; cyano; or trifluoromethyl;

m is 0 or 1; and

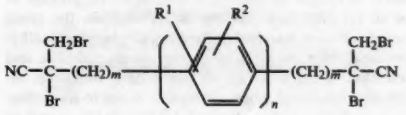
n is 1 or 2.

22. A method of inhibiting the growth of at least one of: bacteria, fungi, and algae, comprising contacting said bacteria, fungi, or algae, with a bactericidally, fungicidally, or algicidally effective amount of a compound of the formula:



(Ia)

or



(Ib)

where

R^1 and R^2 are hydrogen; halo; C_{1-4}alkyl; C_{1-4}alkoxy; hydroxy; nitro; cyano; or trifluoromethyl;

m is 0 or 1; and

n is 1 or 2.

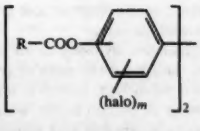
4,366,171

FUNGICIDAL BIPHENYL ESTERS, MIXTURES THEREOF AND METHOD OF USE

Bruce M. Resnick, West Paterson, N.J., assignor to GAF Corporation, New York, N.Y.

Filed Apr. 3, 1981, Ser. No. 250,468
Int. Cl.³ A01N *37/02, 37/06*
U.S. Cl. 424—313 **8 Claims**

1. The method of inhibiting growth of plant pathogenic fungi which comprises exposing said fungi to a growth inhibiting quantity of a compound having the formula



wherein m has a value of from 0 to 2; halo is fluorine, chlorine or bromine and R is a radical having not more than 4 carbon atoms selected from the group consisting of alkenyl, haloalkenyl and haloalkyl; and mixtures of said compounds.

4,366,172

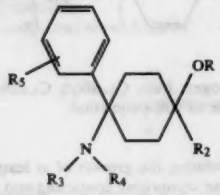
4-AMINO-CYCLOHEXANOLS, THEIR PHARMACEUTICAL COMPOSITIONS AND METHODS OF USE

Daniel Lednicer, Evansville, Ind., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Sep. 29, 1977, Ser. No. 837,510
Int. Cl.³ A01N *33/02*
U.S. Cl. 424—330 **23 Claims**

1. A compound of the formula

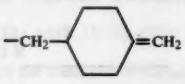
Formula I



wherein R is hydrogen or

wherein R_1 is alkyl of one to three carbon atoms, inclusive;

R_2 is hydrogen, alkyl of one to six carbon atoms, inclusive, alkenyl of two to six carbon atoms, inclusive, alkynyl of two to six carbon atoms, inclusive, wherein the triple bonded carbon is attached to the ring, alkylenylcycloalkyl wherein alkylene is one to six carbon atoms, inclusive, and cycloalkyl is three to six carbon atoms, inclusive, alkylenylcycloalkenyl wherein alkylene is one to six carbon atoms, inclusive, and cycloalkenyl is five to seven carbon atoms, inclusive,



and Q-E wherein Q is alkylene of zero to six carbon atoms, inclusive, and E is

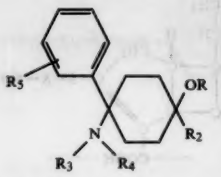
wherein G is hydrogen, halogen, hydroxy, alkyl of one to three carbon atoms, inclusive, or alkoxy of one to three carbon atoms, inclusive;

R_3 and R_4 are the same or different and are alkyl of one to five carbon atoms, inclusive;

R_5 is hydrogen, halogen, hydroxy or alkyl of one to three carbon atoms, each R_5 at the meta or para position with the proviso that when R_5 is hydroxy, R_2 is not hydrogen or alkyl of one to six carbon atoms, inclusive;

or a physiologically acceptable acid addition salt thereof.

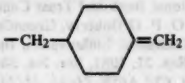
19. A method for producing analgetic effects in a mammal which comprises administering to a mammal in need of said treatment an analgetic effective amount of a compound of the formula



wherein R is hydrogen or

wherein R_1 is alkyl of one to three carbon atoms, inclusive;

R_2 is hydrogen, alkyl of one to six carbon atoms, inclusive, alkenyl of two to six carbon atoms, inclusive, alkynyl of two to six carbon atoms, inclusive, wherein the triple bonded carbon is attached to the ring, alkynlenylcycloalkyl wherein alkylene is one to six carbon atoms, inclusive, and cycloalkyl is three to six carbon atoms, inclusive, alkylenylcycloalkenyl wherein alkylene is one to six carbon atoms, inclusive, and cycloalkenyl is five to seven carbon atoms, inclusive,



and Q-E wherein Q is alkylene of zero to six carbon atoms, inclusive, and E is

wherein G is hydrogen, halogen, hydroxy, alkyl of one to three carbon atoms, inclusive, or alkoxy of one to three carbon atoms, inclusive;

R_3 and R_4 are the same or different and are alkyl of one to five carbon atoms, inclusive;

R_5 is hydrogen, halogen, hydroxy or alkyl of one to three carbon atoms, each R_5 at the meta or para position with the proviso that when R_5 is hydroxy, R_2 is not hydrogen or alkyl of one to six carbon atoms, inclusive;

or a physiologically acceptable acid addition salt thereof, in association with a pharmaceutical carrier.

4,366,173

EDIBLE COLORANT

Bernard J. Parker, Manly Vale, Australia, assignor to Mauri Brothers & Thomson (Aust) Pty. Limited, Sidney, Australia

PCT No. PCT/AU80/00020, § 371 Date Feb. 4, 1981, § 102(e) Date Jan. 27, 1981, PCT Pub. No. WO80/02695, PCT Pub. Date Dec. 11, 1980
PCT Filed Jun. 3, 1980, Ser. No. 233,581
Claims priority, application Australia, Jun. 4, 1979, PD9049
Int. Cl.³ A23L *1/185, 1/272, 1/204, 1/209*
U.S. Cl. 426—20 **32 Claims**

1. A method for producing an edible colourant comprising the steps of:

(A) digesting a roasted malted cereal in water by use of at least one enzyme selected from the group comprising proteases and at least one other enzyme selected from the group comprising carbohydrases; and

(B) subsequently separating an aqueous extract from the remaining solids and retaining said extract whereby there is retained a colourant suitable for use in foodstuffs and beverages.

4,366,174

LOW FAT CHEESE PRODUCT SIMILAR TO SWISS CHEESE

Arnold S. Kneubuehl, 528 Baintree, Lake Summerset, Davis, Ill. 61019, and Stephen A. Kneubuehl, Rte. 1, Dakota, Ill. 61018

Continuation of Ser. No. 135,249, Mar. 31, 1980, abandoned. This application Nov. 30, 1981, Ser. No. 326,065

Int. Cl.³ A23C *19/02, 19/06, 19/14*

U.S. Cl. 426—36 **12 Claims**

1. In a process for producing a low fat cheese having the nutty flavor of Swiss cheese, a fat content of less than 43 percent by weight fat in the dry matter, a moisture content of more than 40 weight percent, and having at least 10 mixed round and irregular holes per 6 inch trier which gives said cheese a lacy appearance when sliced, said process comprising the steps of heating pasteurized milk containing from 0 to 3.0 percent by weight of fat to a temperature of from about 86° to 90° F. in a vat having a gate end, adding from about ¼ to about 1 percent by weight of a lactic culture and from about 1 to 50 ml of frozen concentrated propionic culture per 1000 pounds of milk; ripening the milk for from about 0 to 30 minutes; adding from 2 to 4 ounces of rennet substitute per 1000 pounds of milk; allowing the milk to coagulate for at least 20 minutes; cutting said curd lengthwise and crosswise and thereafter stirring said curd for from about 10 to 35 minutes; allowing said curd to settle, pushing said curd away from the gate end of the vat; drawing one-third by volume of the whey from said vat; stirring said curd for approximately five minutes and thereafter adding an amount of hot water heated to a temperature of between 110° and 145° equivalent to the amount of whey drawn off, cooking said curd with stirring until the desired firmness is obtained; allowing said curd to settle; pumping said cheese curd onto a curd table with continuous stirring; and thereafter transferring said curd into molds; pressing said cheese for at least about two hours at a pressure of from about 15 to 30 pounds p.s.i.g., the improvement comprising cooling said cheese to a temperature of between 35° to 55°" F. during said pressing for at least about two hours and thereafter cutting said cheese into the desired shape and brining said cheese for from about 3 or more hours; boxing said cheese and storing said boxed cheese first in cold storage and then in a warm room until the irregular holes which give the cheese a lacy appearance when sliced have formed; and thereafter storing said cheese in a cool room.

4,366,175

GLAZED LIVER COATED BISCUIT OR KIBBLE FOR PETS

Bruce W. Brown, P.O. Box 600, Medina, Tex. 78055; Virgil E. Copple, 233 Gruene Rd., New Braunfels, Tex. 78130, and Carroll K. Wilson, 1128 Winston, El Paso, Tex. 79907

Continuation-in-part of Ser. No. 927,798, Jul. 25, 1978, Pat. No. 4,229,485. This application Jul. 25, 1980, Ser. No. 172,216

Int. Cl.³ A23K *1/10*

U.S. Cl. 426—92 **5 Claims**

1. A pet food product in the form of dry, solid pieces having high palatability throughout, each comprising a solid core comprising at least 40% of a farinaceous material and from 5–25% by weight of a proteinaceous material, said core containing from 8 to 18% by weight moisture content and being encapsulated in a continuous glazed liver coating containing at least 50% by weight liver on a dry basis and having less than an 18% by weight moisture content, and said coating constituting from 2–20% by weight of the product.

4,366,176

PROCESS FOR THE PRODUCTION OF A STRUCTURE PROTEIN PRODUCT

Pierre Wetzel, Vevey, Switzerland, assignor to Societe D'Assistance Technique Pour Produits Nestle S.A., Lausanne, Switzerland

Filed Mar. 17, 1981, Ser. No. 244,764

Claims priority, application Switzerland, Mar. 31, 1980, 2522/80

Int. Cl.³ A23J *3/00*

U.S. Cl. 426—104 **14 Claims**

1. A process for the production of a structured product from a water-containing protein material having a three-dimensional organisation and a pH of at least 4.5 which comprises compacting the protein material in a semipermeable envelope, closing the envelope and exchanging the water present in the protein material for an osmotic agent capable of penetrating said semipermeable envelope solely by the application of osmotic force by immersing the closed envelope in a solution of the osmotic agent having a pH of at least 4.5.

4,366,177

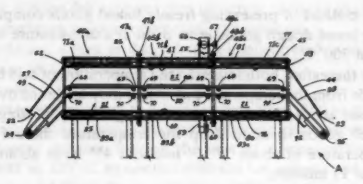
METHOD OF FLAMELESS BROILING OR BAKING GREASY MEAT PRODUCTS

Harold D. Wells, St. Louis County, and Dennis L. Wagner, Ballwin, both of Mo., assignors to Pet Incorporated, St. Louis, Mo.

Filed Jan. 26, 1981, Ser. No. 228,278

Int. Cl.³ A23L *1/31, 3/18*

U.S. Cl. 426—243 **4 Claims**



1. A method of flameless broiling or baking in a tunnel oven of greasy meat products of ordinarily flame-producing character, said meat products having a tendency to burn or produce flame because of grease therein, by conveying the products through the tunnel oven for being heated by infrared radiation at predetermined emission temperatures ordinarily causing flaming of the meat products, the tunnel oven at opposite ends having an entrance and exit, said entrance and exit being maintained open at all times, the tunnel oven having a tunnel floor, said method including heating the interior tunnel surfaces of the tunnel oven to provide for cooking of the meat products in the tunnel oven by infrared radiant energy emitted directly from said surfaces, trapping within said tunnel oven a substantially quiescently trapped, oxygen-starved heated tunnel atmosphere having a slight overpressure by preventing the free exchange of the atmosphere exteriorly of said tunnel oven with said tunnel atmosphere by maintaining the entrance and exit to the tunnel oven at all times at an orientation such that the highest point of each of said entrance and exit is lower than said floor, said tunnel atmosphere substantially preventing burning or flaming of the meat products while within said tunnel atmosphere, and conveying the meat products through said tunnel atmosphere within said tunnel oven by first carrying the meat products upwardly at an angle inclined to the horizontal through said open entrance and into said atmosphere, carrying them along the length of said tunnel oven within said tunnel atmosphere while heating said meat products by the emission of infrared radiation directly from the interior tunnel surfaces resulting from said heating thereof, and subsequently conveying them downwardly at an angle inclined to the horizontal out of said tunnel atmosphere through said

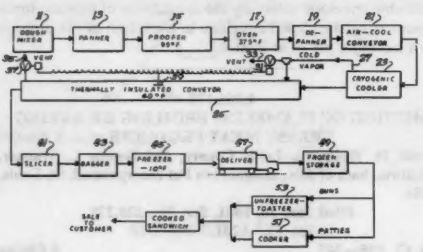
open exit, said predetermined emission temperatures being within the range of from about 200° F. to about 1200° F.

4,366,178

FREEZING BAKED BREAD GOODS

Martin M. Reynolds, Aurora, and Linda Young-Bandala, La Grange, both of Ill., assignors to Liquid Carbonic Corporation, Chicago, Ill.

Filed Apr. 27, 1981, Ser. No. 257,898
Int. Cl.³ A21D 15/02
U.S. Cl. 426—393 9 Claims



1. A method of preserving freshly baked goods comprising baking bread dough goods in an oven at a temperature above about 300° F.,

shortly thereafter, both lowering the temperature of said baked goods from the temperature at which they leave the oven to at least about 120° F. and then cryogenically cooling said baked goods so as to drop the temperature thereof to a temperature of about 37° F. to about 45° F. in about 5 to about 15 minutes,

thereafter maintaining said cryogenically cooled baked goods at a temperature of about 37° F. to about 45° F. for at least about 25 minutes to effect a desired rapid degree of starch crystallization in said baked goods sufficient to fully convert the baked dough to marketable bread goods and, when this desired degree of crystallization is reached,

thereafter freezing said baked goods.

4,366,179

OXYGEN AND CARBON DIOXIDE ABSORBENT AND PROCESS FOR STORING COFFEE BY USING THE SAME

Takanari Nawata; Toshio Komatsu, and Masayuki Ohtsuka, all of Tokyo, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Mar. 11, 1981, Ser. No. 242,562
Claims priority, application Japan, Mar. 17, 1980, 55-33654; Mar. 21, 1980, 55-35900
Int. Cl.³ B65B 55/00; A23F 5/02; B01J 31/26
U.S. Cl. 426—395 8 Claims

1. A method for storing roast coffee powder or beans in a hermetically sealed container made of a substantially gas impermeable packing material that also contains an oxygen and carbon dioxide absorbent comprising (a) a particulate calcium hydroxide impregnated with water or a moisture-conditioning solution and then coated with separator particles, (b) iron powder, and (c) an electrolyte.

4,366,180

PROCESS FOR PRODUCING A LOW-FAT OIL-IN-WATER-IN-OIL EMULSION

Werner W. L. Altrock, and Janis A. Ritums, both of Lidingö, Sweden, assignors to Lever Brothers Company, New York, N.Y.

Filed May 12, 1981, Ser. No. 262,837
Claims priority, application Netherlands, May 21, 1980, 8002925
Int. Cl.³ A23D 3/02, 5/02
U.S. Cl. 426—602 13 Claims

1. A process for producing an edible low-fat oil-in-water-in-oil emulsion spread containing less than 65 wt. % fat, comprising:

(a) feeding a fat constituting the continuous phase of the emulsion into an emulsification unit and units where cooling and working are carried out for a period of time long enough to at least achieve coating of the inner surface of the emulsification unit with said fatty continuous phase;

(b) preparing a proteinaceous oil-in-water emulsion from water, proteins and fat;

(c) deaerating said proteinaceous oil-in-water emulsion;

(d) forming a mixture of the fatty continuous phase with the proteinaceous oil-in-water emulsion by gradually introducing said phase and emulsion into said coated emulsification unit; and

(e) subjecting said mixture to a cooling and working treatment.

4,366,181

FAT BLEND SUBSTANTIALLY FREE OF HYDROGENATED AND INTERESTERIFIED FATS

Willem Dijkshoorn, Vlaardingen; Hindrik Huizinga, Maassluis, and Jacobus N. Pronk, Vlaardingen, all of Netherlands, assignors to Lever Brothers Company, New York, N.Y.

Filed May 26, 1981, Ser. No. 267,231
Claims priority, application Netherlands, May 30, 1980, 8003144
Int. Cl.³ A23D 3/00
U.S. Cl. 426—603 8 Claims

1. Fat blend, which is substantially free of hydrogenated and interesterified fats, comprising:

(i) 60 to 98% of an oil or fat having a slip melting point not exceeding 43° C.; and

(ii) 2 to 40% of a stearin of oils or fats having an average chain length of the fatty acid radicals of 12 to 18 carbon atoms, said stearin having a slip melting point exceeding 30° C.;

in which fat blend the proportion of glycerides having trisaturated fatty acids with a chain length of 12 to 14 carbon atoms ranges from 7 to 14% and the proportion of glycerides having trisaturaed fatty acids with an average chain length of 16 to 18 carbon atom ranges from 7 to 12%; and

which fat blend has an amount of solid phase as determined by pulsed nuclear magnetic resonance of:

N_{10} greater than or equal to 15%

N_{20} greater than or equal to 6.5%

N_{30} smaller than or equal to 5%

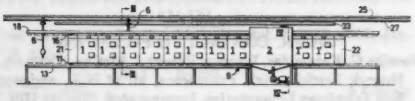
N_{35} smaller than or equal to 3%.

4,366,182

METHOD AND INSTALLATION FOR ROASTING AND GRILLING SKIN-COVERED MEAT PRODUCT, SUCH AS POULTRY AND PARTICULARLY CHICKEN

Karl-Axel Köhler, Torggatan 6, 11265 Stockholm; Rolf Collin, Ringparken 5, S 13150 Saltsjoe Duvnaes, and Ralf Larsson, Brovautare Gt. 37, S-43136 Mölndal, all of Sweden

Filed Sep. 14, 1981, Ser. No. 301,962
Claims priority, application Sweden, Sep. 17, 1980, 8006536
Int. Cl.³ A47J 37/00
U.S. Cl. 426—644 2 Claims



1. A method of roasting and grilling a skin-covered meat product, such as poultry and especially chickens, that is supported by a spit, the spit being suspended vertically from a horizontal conveyor and being heated electrically, the meat product being transported through an oblong cassette oven with heat radiation tubes, characterized in that the skin of the chicken is perforated by means of injection needles, by which simultaneously a saline solution and seasonings atomized therein are injected into the chicken meat, that the chicken is threaded and fastened on the spit whereby the chicken is heated internally, that the heated spit with the chicken is transported in one single cycle and while being rotated through a roasting oven constituting a part of the cassette-oven where it is exposed externally to preferably short-wave infrared radiation for a lower surface effect during the roasting of the chicken, and directly thereafter is transported through a spray box and sprayed with a liquid mixture of oil and finely distributed atomized seasonings, and directly thereafter is transported through a grilling oven constituting a part of the cassette-oven where it is exposed to preferably medium-wave infrared radiation for a higher surface effect during the grilling of the chicken, that the heating of the spit is interrupted, and the spit with the chicken is transported while being cooled from the grilling oven to outside the cassette-oven close to a place where the chicken was threaded on the spit and where the chicken then is picked from the spit.

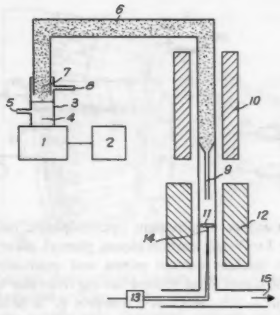
2. An installation for roasting and grilling a skin-covered meat product, such as a chicken, which is pretreated in that the skin of the chicken is perforated and a saline solution with atomized seasonings is injected into the chicken meat, which installation comprises an oblong cassette-oven with heat radiation tubes and an upper slit in the oven roof for the passage of vertically suspended rotary spit, characterized in that the cassette-oven in series comprises a roasting oven, a spray box and a grilling oven, that the heat radiation tubes of the roasting oven preferably are short-wave infrared radiation tubes,that the spray box is provided with nozzle frames for ejecting a liquid mixture of seasonings and oil, that the heat radiation tubes of the grilling oven preferably are medium-wave infrared radiation tubes, that the spit is suspended rotatably in a horizontal conveying means, such as a conveying chain, which as an endless horizontal loop extends with one portion substantially straight above the upper slit along the entire length of the cassette-oven and a short distance outside the ends thereof transforms via its arched portion to a portion, which extends in parallel with said firstmentioned portion and spaced therefrom, and that collector rails in contact with current collectors on the spit extend only along the length of the cassette-oven.

4,366,183

PROCESS FOR MAKING BIOACTIVE COATINGS ON OSSEOUS PROSTHESES, AND PROSTHESES THUS OBTAINED

Josette Ghommidh, Castanet Tolosan; Bernard Buttazzoni, Marseilles; Georges Constant, Ramonville St. Agne; Etienne Diloy, and Roland Morancho, both of Toulouse, all of France, assignors to Societe Europeene de Propulsion, Puteaux, France

Filed Jun. 10, 1981, Ser. No. 272,129
Claims priority, application France, Jun. 17, 1980, 80 13433
Int. Cl.³ A61F 1/24; A61C 13/30
U.S. Cl. 427—2 3 Claims



1. A process for applying thin bioactive coatings to an osseous prostheses support comprising the steps of:

producing a mist of droplets of a concentrated liquid solution of a phosphate of calcium;

entraining said mist in a gaseous current;

heating said support to a temperature from 200° to 600° C.,

directing said gaseous current containing said mist onto the heated support, heating the mist to a temperature from 100° to 350° C. by contact with the hot support and vaporizing the liquid from said liquid solution to deposit a coating of calcium phosphate material on said support, said phosphate material initially present in the liquid solution being transformed into at least one bioactive phosphate selected from the group consisting of hydroxyapatite, beta-form tricalcium phosphate, gamma- and beta-form calcium pyrophosphate, brushite, monetite and mixtures of one or more of the foregoing; and

maintaining the operational conditions of said deposition such that the thickness of the deposited coating is from 2 to 15 micrometers.

4,366,184

METHOD FOR BONDING SILICONE ELASTOMERS TO METAL SUBSTRATES

Robert A. Auerbach, Allison Park, and Herman V. Boenig, Erie, both of Pa., assignors to Lord Corporation, Erie, Pa.

Filed Jun. 22, 1981, Ser. No. 276,215
Int. Cl.³ B05D 3/06
U.S. Cl. 427—41 12 Claims

1. A method for bonding vulcanizable silicone elastomer compositions to metal substrates comprising:

(a) treating at least one metal substrate in a plasma comprising at least one organosilicon monomer having the formula

$$A-R^{\circ}-\underset{\displaystyle R_a^1}{\underset{|}{Si}}-X_{3-a};$$

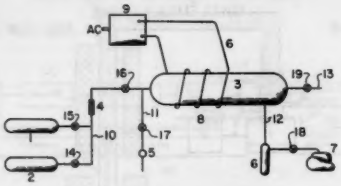
wherein

R^o is a divalent aliphatic, cycloaliphatic or aromatic radical having from one to 20 carbon atoms;

R^1 is hydrogen, halogen or a monovalent aliphatic, cycloaliphatic or aromatic radical having from 1 to 20 carbon atoms;

X is halogen or $—OR^2$, wherein R^2 is halogen or a monovalent aliphatic, cycloaliphatic or aromatic radical having from 1 to 8 carbon atoms;

A is selected from the group consisting of hydrogen, hydroxy, mercapto, oxirane, carboxyl, isocyanato, acryloxy, methacryloxy and amino having the formula $—NH\ R^5$, wherein R^5 is selected from the group consisting of hydrogen, monovalent aliphatic radicals containing from one to



8 carbon atoms, monovalent cycloaliphatic radicals having from 4 to 7 ring carbon atoms, phenyl, alkaryl radicals having 6 nuclear carbon atoms and containing one or more substituent alkyl groups having from one to 4 carbon atoms and $—R^6—NH—R^7$, wherein R^6 is selected from the group consisting of divalent aliphatic, cycloaliphatic and aromatic radicals having from one to 20 carbon atoms, and R^7 is the same as R^5; and

a is zero or one;

(b) contacting such plasma-treated metal substrate with a vulcanizable silicone rubber composition; and

(c) subjecting the resultant assembly to conditions sufficient to vulcanize said elastomer.

4,366,185

METAL-RESIN COMPOSITE AND PROCESS FOR ITS PRODUCTION

Atsuo Tanaka, Tokuyama; Takaaki Okamura, Yanai; Katsumi Kanda, and Yoshikazu Kondo, both of Kudamatsu, all of Japan, assignors to Toyo Kohan Co., Ltd., Tokyo, Japan

Filed Aug. 28, 1980, Ser. No. 182,002

Claims priority, application Japan, Feb. 12, 1980, 55-14816

Int. Cl.³ B05D 5/00, 7/14

U.S. Cl. 427—386 **14 Claims**

1. A process of producing a metal-resin composite, capable of controlling the pH of a solution, which permeates through the resin to the metal, to within the range of from 4 to 12, comprises

providing a first solution or dispersion of at least one resin selected from the group consisting of epoxy resins, phenolic resins, acrylic resins, polyamide resins, alkyd resins, melamine resins, urea-formaldehyde resins, polybutadiene resins, polyester resins, silicone resins, polyolefin resins, urethane resins and polystyrene resins, said first solution or dispersion having dispersed therein at least one particulate metal compound selected from the group consisting of oxides, hydroxides, carbonates, acid carbonates, borates, perborates, phosphates, acid phosphates, silicates, aluminates, stannates, tungstates, molybdates, chromates, manganates, permanganates and carboxylates of Group I A and Group II A metals of the Periodic Table, the amount of said metal compound in said first solution or dispersion being 1–500 parts by weight per 100 parts by weight of said resin,

coating said first solution or dispersion, having said metal compound dispersed therein, on a metal substrate,

heating the thus coated substrate at a temperature and for a time sufficient to evaporate the solvent for said resin and cure said resin, thus producing a first resin layer adhering to said metal substrate,

coating the surface of said first resin layer with a second solution or dispersion of said resin having dispersed therein at least one particulate metal selected from the group consisting of aluminum, chromium, zinc, tin, nickel, cobalt and manganese, or an alloy thereof, in an amount of 1–500 parts by weight per 100 parts by weight of said resin, and

heating the thus coated resin layer at a temperature and for a time sufficient to evaporate the solvent for said resin and cure said resin, thus producing a second resin layer adhering to said first resin layer.

4,366,186

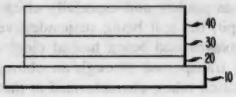
OHMIC CONTACT TO P-TYPE INP

Vassilis G. Keramidas, Warren; Robert J. McCoy, Chatham, and Henryk Temkin, New Providence, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 27, 1979, Ser. No. 79,451

Int. Cl.³ H01L 21/28; B05D 5/12

U.S. Cl. 427—89 **15 Claims**



1. A method for making an ohmic contact to a semiconductor device comprising a p-type semiconductor material selected from the group consisting of InP and InGaAsP comprising the steps of:

depositing beryllium-gold on said semiconductor material;

depositing gold on said beryllium-gold; and

heat treating said device at a temperature less than 440 degrees C. for a residence time of at least 1 minute.

4,366,187

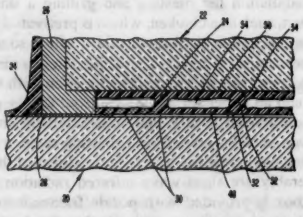
IMMERSION CURING OF ENCAPSULATING MATERIAL

William Gabriel, Andover, Mass., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Oct. 31, 1980, Ser. No. 202,860

Int. Cl.³ B05D 5/12

U.S. Cl. 427—96 **11 Claims**



1. A method of forming a void-free coating over a film-type electrical conductor on a substrate wherein the substrate has been secured to an associated article with a fixed space between the substrate and the article, which comprises:

flowing a layer of RTV material into the fixed space between the secured substrate and article in air so as to cover the film-type electrical conductor on the substrate;

temporarily immersing the secured substrate and article, and the layer of RTV material therebetween, in a liquid as the RTV material cures, such that the RTV material forms

the void-free coating over the film-type electrical conductor on the substrate; and

subsequently removing the secured substrate and article, and the RTV material therebetween, from the liquid.

4,366,188

METHOD OF EMPLOYING ENCAPSULATED MATERIAL

Julia M. Alston, Myrtle Bank, Australia, assignor to Moore Business Forms, Inc., Grand Island, N.Y.

Continuation-in-part of Ser. No. 37,417, May 9, 1979, abandoned, which is a continuation-in-part of Ser. No. 485,779, Jul. 5, 1974, abandoned. This application Feb. 13, 1980, Ser. No. 121,134

Claims priority, application Australia, Jul. 9, 1973, 4001; Jan. 14, 1974, 6256

Int. Cl.³ B41M 3/12

U.S. Cl. 427—150 6 Claims

1. A method of first producing and then intensifying the images on one of the more weakly imaged sheets in a computer printout carbonless paper manifold, involving the rupture of microcapsules in the manifold, and comprising:

forming an interface by contacting two paper surfaces of the manifold from which said weakly imaged sheet is to be formed and at least one of which paper surfaces contains a microcapsular coating of a liquid substance containing a dye which is liquid at room temperature, said substance being capable of forming an adhesive bond with or fusing with a developer pigment selected from the group consisting of carbon black, magnetic iron oxide, red pigment, blue pigment and a pigmented resin or polymer;

releasing said liquid substance imagewise to form an initial original visible dye image on at least one of said paper surfaces at the interface by the imagewise application of pressure applied to one of the papers;

intensifying said initial original dye image to greater optical or magnetic readout capability by applying thereto at least one of said pigments and finally fixing the intensified image by heat or solvation.

4,366,189

4-HETEROCYCLYL-4'-VINYLSTILBENES

Kurt Burdeska, Basel; Guglielmo Kabas, Aesch, and Kurt Weber, Basel, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

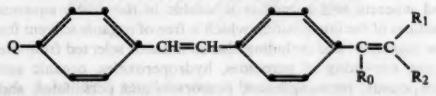
Filed Dec. 10, 1980, Ser. No. 214,946

Claims priority, application Switzerland, Dec. 21, 1979, 11402/79; Sep. 18, 1980, 7008/80

Int. Cl.³ B05B 5/00

U.S. Cl. 427—157 20 Claims

1. A 4-heterocyclyl-4'-stilbene of the formula



wherein Q is a monocyclic 5- or 6-membered aromatic heterocyclic ring containing nitrogen or containing nitrogen and oxygen, which is unsubstituted or substituted by non-chromophoric groups and which contains 0, 1 or 2 fused benzene rings, or is a bicyclic 9-membered aromatic heterocyclic ring, phenyl which is unsubstituted or substituted by non-chromophoric groups, or is cyano, carboxyl, alkoxycarbonyl, alkylsulfonyl or arylsulfonyl, R_0 is hydrogen, or alkyl which is unsubstituted or substituted by non-chromophoric groups, R_1 is hydrogen, or is alkyl, alkoxycarbonyl, carbamoyl or sulfonamide, each of which is unsubstituted or substituted by non-chromophoric groups, or is alkenyl, carboxyl, alkylsulfonyl, arylsulfonyl, aralkylsulfonyl, cyano, sulfo or phosphonic acid dialkyl ester, and R_2 is hydrogen, or is alkyl or alkenyl, each of which is unsubstituted or substituted by non-chromophoric groups, with the proviso that at most one of R_1 and R_2 is hydrogen.

4,366,190

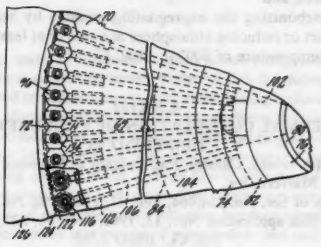
LOCKING PATCH MACHINE

Philip J. Rodden, 42 Baker Ave., Beverly, Mass. 01915, and Richard J. Duffy, 23 Lee St., Salem, Mass. 01970

Continuation-in-part of Ser. No. 163,217, Jun. 26, 1980, abandoned. This application May 18, 1981, Ser. No. 262,194

Int. Cl.³ B05D 7/22

U.S. Cl. 427—183 34 Claims



1. An apparatus for applying locking resin to a succession of internally threaded articles, comprising:

a feeder to supply said threaded articles in substantially continuous succession;

a support for receiving said threaded articles from said feeder for conveying them along a path for treatment, the successive threaded articles having their axes of their threaded portions in an up and down position and having an opening at the lower end of the threaded portion substantially uncovered;

means for heating said threaded portion of said threaded articles to a temperature above the softening point of a resin to be applied;

applicator means associated with each of said threaded articles for directing particles of heat fusible resin upwardly through said openings at the lower ends of each of said threaded articles against an area of each of said threaded portions of said threaded articles in said portion of said path to cause said resin particles to be softened by heat from said threaded portions and to build up a deposit on each said area;

said threaded articles and said applicator means being rotatable one with respect to the other during application of the heat fusible resin to said article; and

stationary means located adjacent the path of said support to thereby cause said rotation between said threaded article and said applicator means, whereby said heat fusible material is deposited onto a desired circumferential segment or said threaded portions during movement of said support along said path.

4,366,191

METHOD OF INCREASING THE STRENGTH OF CARBON AND GRAPHITE MEMBERS

Guido Gistinger, Biberbach, and Manfred Schmid, Meitingen, both of Fed. Rep. of Germany, assignors to Sigri Elektrographit GmbH, Meitingen bei Augsberg, Fed. Rep. of Germany

Filed Jan. 19, 1978, Ser. No. 870,852

Claims priority, application Fed. Rep. of Germany, Feb. 12, 1977, 2706033

Int. Cl.³ B05D 3/08

U.S. Cl. 427—228 8 Claims

1. Method of increasing the strength of a porous carbon or graphite body formed from a mixture of granular carbon-containing substances with a carbonizable binder and heating in the absence of air to carbonize the binder which comprises

subjecting said body to a single resin impregnation and carbonization by

(a) immersing the porous body in a mixture in which 35 to 70% by weight of a hardenable resin containing an aldehyde, selected from the group consisting of phenol-formaldehyde resins, furan resins and melamine resins is admixed with 30 to 65% by weight of a volatile liquid, organic solvent and in the absence of colloidal graphite, to impregnate the pores of the porous body with said mixture;

(b) Heating the impregnated porous body to a temperature of 120° to 180° C. to effect hardening the resin in said pores; and

(c) carbonizing the impregnating medium by heating in an inert or reducing atmosphere at a rate of at least 3 K/hr to a temperature of 800° to 1300° C.

4,366,192

THERMAL COAGULATION OF POLYURETHANE DISPERSIONS

John McCartney, Chester, Pa., assignor to Norwood Industries, Inc., Malvern, Pa.

Division of Ser. No. 234,464, Feb. 17, 1981, Pat. No. 4,332,710. This application Nov. 13, 1981, Ser. No. 321,246

Int. Cl.³ B05D *3/02*

U.S. Cl. 427—246 **17 Claims**

1. A method of preparing a composite sheet material comprising:

impregnating at least a portion of porous sheet material with an aqueous anionic polyurethane composition including an aqueous polyurethane dispersion having anionic groups covalently bonded to the polymer chain and solubilized by the addition of a cationic compound which forms a salt with the anionic group and a compound which, when heated, generates acid which displaces the cationic compound from the covalently bonded anionic group;

heating the impregnant to generate said acid and coagulate the polyurethane dispersion in said porous sheet material; and

drying said impregnant to form a composite sheet material.

4,366,193

CATECHOL-BASED VAPOR PERMEATION CURABLE COATING COMPOSITIONS

Gary L. Linden, Upper Arlington, Ohio, and Shiraz A. Kathiriya, Irvine, Calif., assignors to Ashland Oil, Inc., Dublin, Ohio

Filed Apr. 10, 1981, Ser. No. 252,844

Int. Cl.³ B05D *3/04*

U.S. Cl. 427—340 **18 Claims**

1. A method for coating a substrate with a coating composition which comprises:

(a) applying a film of said coating composition to said substrate, said coating composition comprising an aromatic hydroxyl-functional compound comprising substituted or unsubstituted 1,2-dihydroxybenzene or derivatives thereof and a multi-isocyanate curing agent therefor, at least one of said aromatic hydroxyl-functional compound or said curing agent being polymeric; and

(b) exposing said coated substrate to a vaporous tertiary-amine catalyst to rapidly cure said applied film.

10. A coating composition rapidly curable at room temperature in the presence of a vaporous tertiary amine catalyst which comprises:

(a) an aromatic hydroxyl-functional compound comprising substituted or unsubstituted 1,2-dihydroxybenzene or a derivative thereof; and

(b) a multi-isocyanate curing agent containing at least about 10% aromatic multi-isocyanate content by weight, at least one of said aromatic hydroxy-functional compound or said curing agent being polymeric.

4,366,194

RENDERING POROUS STRUCTURES IMPERMEABLE BY TREATMENT WITH PH INSENSITIVE GELABLE COMPOSITIONS OF AMIDE POLYMERS AND COMPOSITION

Richard J. Pilny, and Thomas W. Regulski, both of Midland, Mich., assignors to The Dow Chemical Co., Midland, Mich.

Continuation of Ser. No. 911,863, Jun. 2, 1978, Pat. No. 4,199,625. This application Apr. 21, 1980, Ser. No. 141,866

The portion of the term of this patent subsequent to Apr. 22, 1997, has been disclaimed.

Int. Cl.³ B05D *3/02*

U.S. Cl. 427—385.5 **17 Claims**

1. A method for rendering a porous structure impermeable which comprises treating the porous structure with a gelable aqueous reaction mixture comprising an aqueous medium having dispersed therein a water-soluble polymer derived from an ethylenically unsaturated amide, an aliphatic polyaldehyde and a metal salt of a hypohalite in proportions such that, at an effective reaction temperature and an alkaline pH from about 8 to about 13.5, the reaction mixture upon being forced into and over the porosities of the structure reacts to form a gel capable of rendering said structure impermeable to the passage of aqueous liquids.

4,366,195

FORMATION OF POLYMERIC COATINGS

Wilbur S. Hall, Plymouth Meeting, Pa., assignor to Amchem Products, Inc., Ambler, Pa.

Continuation of Ser. No. 24,399, Mar. 27, 1979, abandoned, which is a continuation of Ser. No. 800,137, May 24, 1977, abandoned. This application Oct. 2, 1980, Ser. No. 193,081

Int. Cl.³ B05D *1/18*

U.S. Cl. 427—435 **18 Claims**

1. A process for coating a metallic surface comprising immersing the surface in an acidic aqueous coating composition containing a monomer which is capable of polymerizing by addition polymerization to form an addition polymer which has a multiplicity of groups, namely carboxyl (—COOH), phenolic (—OH) or sulfonic ($—SO_3H$) groups, which are capable of ionizing to form respectively on the polymer chain the negatively charged groups $—COO^-$, $—O^-$, or $—SO_3^-$, and wherein said monomer is soluble in the acidic aqueous medium of the composition which is free of organic solvent for the monomer, and including also an initiator selected from the group consisting of peroxides, hydroperoxides, organic azo compounds, permanganates, perborates and persulfates, and polymerizing said monomer to form said addition polymer on said surface which said surface is immersed in said composition.

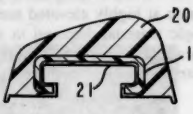
6. A process for coating a metallic surface comprising contacting the surface with an autodepositing composition comprising an acidic aqueous coating solution having dispersed therein about 5 to about 550 g/l of pre-formed resin solids, a soluble ferric-containing compound in an amount equivalent to about 0.025 to about 3.5 g/l of ferric iron, and hydrofluoric acid and having a pH within the range of about 1.6 to about 5, and including also about 0.5 to about 50 wt.% of a monomer which is capable of polymerizing, and forming on the surface a coating including autodeposited resin formed from said preformed resin solids and also resin formed from said monomer.

4,366,196

PLASTIC MOLDING STRIP

Tadashi Maekawa, 108-1, inohana, Miyoshi, Miyoshi-cho, Nishikamo-gun, Aichi Pref, and Yutaka Watanabe, 1820-3, Minamiyakata, Sakae-cho, Toyoake-city, Aichi Pref., both of Japan

Filed Jun. 25, 1981, Ser. No. 277,230
Claims priority, application Japan, Jul. 1, 1980, 55-93237[U]
Int. Cl.³ B60R *13/04*; B32B *7/02*
U.S. Cl. 428—31 3 Claims



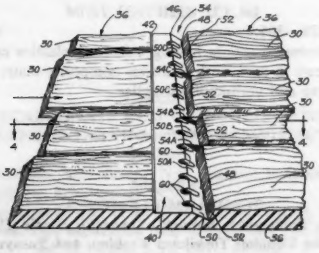
1. A plastic molding strip for automotive vehicles, the plastic molding strip comprising:
a core member having a C-shaped cross section and formed of a hard resin plastic selected from the group consisting of hard vinyl chloride, acrylonitrile butadiene styrene, and polypropylene, and
a molding member formed of soft vinyl chloride bonded directly to a least the entire outer surface of said C-shaped core member, at least the outer surface of the molding member opposite the middle portion of said C-shaped member being exposed to the atmosphere.

4,366,197

BUILDING WALL PANELS AND METHOD OF MAKING THE SAME

Charles M. Hanlon, Addison; James H. Mein, Palatine, and William J. Schultz, Saint Charles, all of Ill., assignors to Masonite Corporation, Chicago, Ill.

Filed Jul. 28, 1980, Ser. No. 172,558
Int. Cl.³ E04D *1/26*, *3/30*
U.S. Cl. 428—43 5 Claims



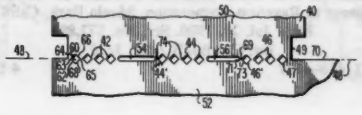
1. A building panel having a back face, top, bottom and opposite side edges and an outer front face having a deep embossed, weather resistant surface formed with a pattern resembling a plurality of shingle elements laid side-by-side in a common row having an irregular lower edge, at least one severance discontinuity formed in said panel sheet positioned along said irregular edge on said row of shingle elements, said panel having a section of reduced thickness along said irregular edge formed in said back face adjacent to said severance discontinuity, said section of reduced thickness adapted for overlapping a top portion of a subjacent building panel upon application of the panels to the exterior of a building structure, said irregular lower edge extending between said outer front face and an intermediate surface between said back face and said front face defining said section of reduced thickness.

4,366,198

SHEET MATERIAL SEPARATION CONSTRUCTION

Robert J. Ramspacher, Jr., Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 24, 1981, Ser. No. 246,937
Int. Cl.³ B32B *3/10*
U.S. Cl. 428—43 10 Claims



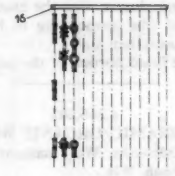
1. A sheet material separation construction comprising:
a plane sheet of printed circuit board which fractures when subjected to bending stress, said sheet having a plurality of spaced aligned apertures, each aperture being formed of at least two side walls, said side walls intersecting at an angle less than 180° at at least one point, the points of intersection being aligned along a given line at which said board is to be separated, said given line being non-coincident with any of said side walls whereby bending stresses are concentrated at said points of intersection and said board separates substantially at said given line.

4,366,199

DECORATIVE TEXTILE ELEMENT

Pierre Grosjean, Sainte-Foy-les-Lyon, France, assignor to Rhone-Poulenc-Textile, Paris, France

Filed Jul. 7, 1980, Ser. No. 166,395
Claims priority, application France, Jul. 6, 1979, 79 19132
Int. Cl.³ B32B *5/12*
U.S. Cl. 428—114 9 Claims



1. A decorative textile article comprising at least one decorative textile element, each element comprising an assembly of parallel textile yarns arranged in a bundle, the ends of the yarns in each bundle being glued or welded together at both ends of the bundle, and an elongate yarn threaded through the glued or welded ends of each of said at least one element.

4,366,200

NON-SKID STRUCTURAL SURFACE

Walter N. Ecker, North St. Paul, Minn., assignor to Proform, Inc., Minneapolis, Minn.

Filed Dec. 24, 1980, Ser. No. 220,109
Int. Cl.³ B32B *3/00*
U.S. Cl. 428—156 5 Claims

1. A nonskid fiberglass surface comprising:
a repeating series of first and second adjacent strips, said first strips being relatively planar, said second strips including protrusions extending above the plane of said first strips, said second strips comprised of a plurality of rows of said protrusions, adjacent said rows being staggered with respect to one another and alternate said rows being aligned with respect to one another, each said protrusion having a four-sided pyramidal shape with an apex and a base of four corners, said base having longer length be-

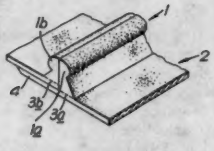
tween one set of opposite corners than width between a second set of opposite corners.

4,366,201

HEAT SHRINKABLE WRAPAROUND CLOSURES

Pushpkumar D. Changani, Swindon, Donald G. Peacock, Kempsford, and David Roberts, Swindon, all of England, assignors to Raychem Corporation, Menlo Park, Calif.

Filed Jul. 28, 1980, Ser. No. 172,898
Int. Cl.³ B32B *1/08, 3/10*
U.S. Cl. 428—157 4 Claims



1. A process for the production of a heat-recoverable wraparound closure, the wraparound closure including a carcass having opposed edge regions of initially fusion bondable polymeric material, the process for production comprising the steps of:

forming a projecting grippable rib on each opposed edge region by fusion of fusion bondable polymeric material to the fusion bondable polymeric material, one of said ribs being formed so that it is higher than the other rib by approximately the thickness of the carcass and wherein a portion of the carcass adjacent the higher rib extends beyond the edge region defining a flap for underlying the other end of the carcass thereby enabling the closure to be assembled smoothly, wherein prior to forming the ribs, the wraparound closure with the exception of the flap is deformed, said ribs cooperating to form a rail for the purpose of connection; and

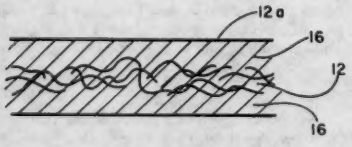
cross-linking the fused portion of the polymeric material.

4,366,202

CERAMIC/ORGANIC WEB

Joseph Borovsky, Menasha, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Jun. 19, 1981, Ser. No. 275,582
Int. Cl.³ B32B *5/16*; D04H *1/72*
U.S. Cl. 428—283 12 Claims



1. An improved organic/ceramic web having high levels of ceramic particles, capable of being shaped and then fired at elevated temperatures in desired atmospheric environments to form high strength ceramic articles, said web includes a thermoplastic flexible and fibrous substrate having fibers randomly arranged, highly dispersed and bonded at the filament junctions, said improvement comprising:

a. a first ceramic particle coating covering a top surface of said substrate; and

b. a second ceramic particle coating covering a bottom surface of said substrate, said first and second coatings comprised of an adhesive binder, ceramic fillers, and a wetting agent in an aqueous system, said binder being the type which provides substantially high levels of adhesion with said fillers having a high filler-to-binder ratio admixture of about 15 to 1, said binder also providing cohesion of said first coating to said second coating around as well as between the randomly arranged and highly dispersed fibers of said substrate, said adhered coatings providing a thixotropic material having a high content of ceramic particles covering said thermoplastic substrate providing a web that is shapable to a desired structural configuration, during use, said substrate being the type which will rapidly disintegrate at highly elevated temperatures leaving said thixotropic material disposed in said desired structural configuration, to thereby provide a shaped ceramic article with strong ceramic bonding between said ceramic particles.

4,366,203

FOAMED PLASTICS LAMINATES

Peter J. Briggs, Cheshire, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Jun. 11, 1981, Ser. No. 272,467
Claims priority, application United Kingdom, Jul. 11, 1980, 8022712
Int. Cl.³ B32B *5/02, 19/04*
U.S. Cl. 428—304.4 7 Claims

1. A laminated article having a rigid foam plastics core covered, at least in part, with a composite layer of vermiculite lamellae and a metal foil.

4,366,204

FOAMED PLASTICS LAMINATES

Peter J. Briggs, Cheshire, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Jun. 11, 1981, Ser. No. 272,468
Claims priority, application United Kingdom, Jul. 11, 1980, 8022711
Int. Cl.³ B32B *5/02, 19/04*
U.S. Cl. 428—304.4 6 Claims

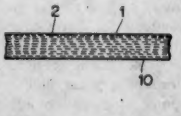
1. A laminated article having a foamed plastics core covered, at least in part, with a fibrous composite material comprising fibre and vermiculite lamellae.

4,366,205

TONE-ARM ELEMENTS

Tsunehiro Tsukagoshi; Shinichi Yokozeki; Sumio Hagiwara; Masataka Uchidoi; Toshikazu Yoshino, and Yasuyuki Arai, all of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Mar. 18, 1981, Ser. No. 244,897
Claims priority, application Japan, Mar. 31, 1980, 55-40266
Int. Cl.³ B32B *5/00, 9/00*
U.S. Cl. 428—338 10 Claims



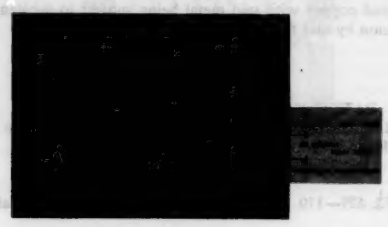
1. A tone-arm element fabricated from a kneaded mixture comprising polypropylene, polymethyl methacrylate and flaky graphite powder.

4,366,206

NOVEL WATER-SWELLABLE FIBERS HAVING A HIGH DEGREE OF WATER-SWELLABILITY AND EXCELLENT PHYSICAL PROPERTIES AND PROCESS FOR PRODUCING THE SAME

Koji Tanaka, Okayama, Japan, assignor to Japan Exlan Co., Ltd., Osaka, Japan

Continuation of Ser. No. 30,872, Apr. 17, 1979, abandoned. This application Aug. 24, 1981, Ser. No. 295,314
Claims priority, application Japan, Apr. 18, 1978, 53-46058
Int. Cl.³ D02G 3/00
U.S. Cl. 428—373 10 Claims



1. Water-swellable fibers with a high degree of swellability composed of an outer layer of a hydrophilic crosslinked polymer and an inner layer of an acrylonitrile polymer, such fiber being produced by contacting acrylonitrile fibers with an aqueous solution of an alkali-metal hydroxide of a high concentration not less than 6.0 mol/1000 g, or an aqueous solution of an alkali-metal hydroxide of a low concentration coexisting with an electrolytic salt of a concentration not less than 0.5 mol/1000 g for a sufficient time to cross-link and render the outer layer of the fibers hydrophilic, thereby producing fibers having said hydrophilic cross-linked outer layer and a non-cross-linked, non-hydrophilic acrylonitrile inner layer.

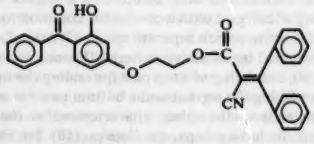
4,366,207

POLYCARBONATE RESINS STABILIZED WITH NITRILES CONTAINING A 2-OH BENZOPHENONE GROUP

Blair T. Anthony, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

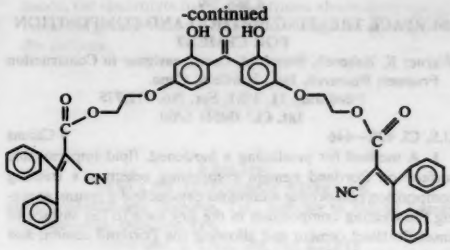
Continuation-in-part of Ser. No. 241,993, Mar. 9, 1981, abandoned. This application May 6, 1982, Ser. No. 375,524
Int. Cl.³ C08K 5/16; C07C 121/72
U.S. Cl. 428—412 19 Claims

1. A comparison of matter comprising (1) a polycarbonate resin susceptible to degradation by ultraviolet light and (2) an effective amount of a UV stabilizer selected from the class consisting of



and

-continued

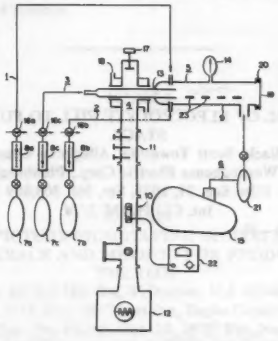


4,366,208

PROCESS FOR FORMING PHOTOCONDUCTIVE ORGANIC FILM

Yoshimi Akai; Masahiko Hirose, both of Yokohama, and Hideo Sanpei, Hiratsuka, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Oct. 22, 1980, Ser. No. 199,664
Claims priority, application Japan, Oct. 23, 1979, 54-135937
Int. Cl.³ B05D 5/12
U.S. Cl. 427—421 6 Claims



1. A process for forming a photoconductive organic film on a substrate by the plasma polymerization reaction, comprising the steps of:

activating a carrier gas in a microwave plasma producing region;

introducing an organic compound vapor and a halogen compound vapor directly individually into a polymerization reaction region; and

introducing said activated carrier gas into said polymerization reaction region, thereby carrying out the plasma polymerization reaction in a region separated from said microwave plasma introducing region in the presence of said halogen compound vapor to form on the substrate a photoconductive organic film having a photoconductivity in the near infrared region of from 0.8 to 3.0 μm.

2. An article of manufacture, comprising a substrate and a photoconductive organic film on the substrate, wherein said film is applied according to the process of claim 1.

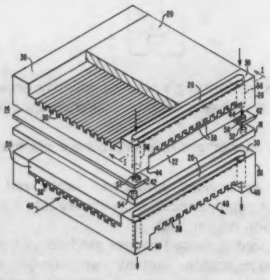
4,366,209
SURFACE TREATING METHOD AND COMPOSITION FOR CEMENT
Warner K. Babcock, Stamford, Conn., assignor to Construction Products Research, Inc., Fairfield, Conn.
Filed Jun. 11, 1981, Ser. No. 272,775
Int. Cl.³ B05D 5/00
U.S. Cl. 428—446 9 Claims

1. A method for producing a hardened, fluid impermeable surface on Portland cement comprising selecting a treating composition comprising aluminous cement and gypsum, applying the treating composition in the dry state to the surface of unset Portland cement and allowing the Portland cement and treating composition to set.

4,366,210
CORROSION RESISTANT THERMOSTAT METAL COMPOSITIONS
Stanley M. Golemo, Jr., West Lawn, and Anthony J. Izbicki, Reading, both of Pa., assignors to Hood and Co., Inc., Hamburg, Pa.
Filed Nov. 14, 1980, Ser. No. 207,011
Int. Cl.³ B32B 15/01, 15/18
U.S. Cl. 428—617 5 Claims

1. A thermostat metal comprising metallurgical bonded layers of
(a) a corrosion resistant high expansivity alloy,
(b) a corrosion susceptable low expansive alloy comprised of 36% Ni, balance Fe, and
(c) a cap over the low expansivity alloy consisting of a corrosion resistant alloy having an expansivity less than three times that of the low expansivity alloy and a hardness within 15% of that of the low expansivity alloy at all states of temper.

4,366,211
CONTROL OF ELECTROLYTE FILL TO FUEL CELL STACK
William Pollack, Scott Township, Allegheny County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Sep. 21, 1981, Ser. No. 303,809
Int. Cl.³ H01M 2/14
U.S. Cl. 429—38 25 Claims

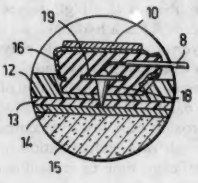


1. In a fuel cell utilizing a liquid electrolyte and having an anode electrode, a cathode electrode and a matrix sandwiched between plates,
a pair of spaced electrolyte fill openings extending through said plates and said matrix;
said fill openings in said matrix being offset from and partially aligned with said fill openings in said plates.

4,366,212
NON-AQUEOUS CELL WITH FLUID CATHODE DEPOLARIZER AND CORRODIBLE CATHODE
Arabinda N. Dey, Needham, Mass.; William L. Bowden, Nashua, N.H., and Per Bro, Santa Fe, N. Mex., assignors to Duracell International Inc., Bethel, Conn.
Filed Feb. 9, 1981, Ser. No. 232,778
Int. Cl.³ H01M 4/36
U.S. Cl. 429—101 11 Claims

1. A non-aqueous electrochemical cell comprising an anode comprised of a metal selected from alkali metals, alkaline earth metals and aluminum, a fluid cathode depolarizer and a cathode consisting essentially of a porous metal selected from iron, steel and copper with said metal being subject to substantial corrosion by said fluid cathode depolarizer.

4,366,213
BATTERY AND CONTACT COMBINATION
Pentti J. Tamminen, Kaskenkaatajantie 12 D, 02100 Espoo 10, Finland
Filed Jun. 16, 1981, Ser. No. 274,122
Int. Cl.³ H01M 2/20
U.S. Cl. 429—110 9 Claims

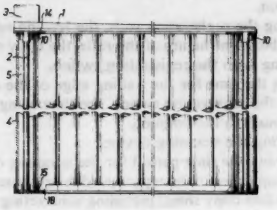


1. A battery and contact combination, comprising:
(a) a battery with at least one cell,
(b) a plastic hermetically sealed casing enclosing said battery, at least one of the terminals of the battery being arranged inside said casing close to its inner surface,
(c) current collector means including at least one contact element adapted to penetrate said casing at a weakened point thereof and make contact with said terminal, said contact element comprising a sharp metallic contact pin at least partly embedded in a pad of a resilient compound, said pad being compressed against the area surrounding the contact point to seal said area, and
(d) clamping elements for clamping said contact element in place.

4,366,214
SEALING DEVICE
Alfons S. M. Lindholm, Lidingo, Sweden, assignor to Rolf Magnusson, Saltsjobaden, Sweden, a part interest
Filed Mar. 9, 1981, Ser. No. 241,988
Claims priority, application Sweden, Mar. 17, 1980, 8002078
Int. Cl.³ H01M 2/18
U.S. Cl. 429—140 4 Claims

1. Device for sealing the tubes in a tubular electrode plate of an electrochemical lead cell, comprising a tubular electrode plate having a lead grid with a conductor common to all tubes, a top bar (1), from which separate spines (2) extend, each one being surrounded by an active material (5) enclosed in a tubular casing (4), consisting of a top part for sealing the upper ends of the tubes facing the top bar and a bottom part for sealing the lower, free ends of the tubes, characterized in that the top sealing part including separate sleeves (10) for each tube, which are arranged on a connecting strip (14), each sleeve having a bottom (12) with a central through hole (13) with a

diameter corresponding to the diameter of the spine (2), which is to protrude therethrough, and a wall (11) the periphery of



which corresponds to the periphery of the tubular casing (4) which is to butt thereagainst.

4,366,215

ELECTROCHEMICAL CELL

Johan Coetzer, and Michael M. Thackeray, both of Pretoria, South Africa, assignors to South African Inventions Development Corp., Pretoria, South Africa

Filed Oct. 30, 1980, Ser. No. 202,323

Claims priority, application South Africa, Nov. 6, 1979, 79/5963; Jan. 14, 1980, 80/0214; Jul. 18, 1980, 80/4346

Int. Cl.³ H01M *4/04, 4/62*

U.S. Cl. 429—199 **19 Claims**

1. A method of making a cathode suitable for a secondary electrochemical cell which comprises activating or preconditioning one or more oxides which have a spinel-type or oxospinel-type structure according to the formula

$$AB_2O_4$$

wherein:

at least one of A or B is a transition metal; and

each of A and B is a di-, tri- or tetravalent cation of a metal selected from the group consisting in Ti, V, Cr, Mn, Fe, Co, Ni, Cu, Zn, Mg and Al to form therefrom a cathode which is in the form of a stable three dimensional framework structure, the structure, when in a secondary electrochemical cell with a compatible electrolyte and a compatible anode, being capable of reversible charge/discharge reactions while being stable with regard to other physical or chemical changes in structure the activation or preconditioning being electrical, and comprising subjecting the starting material to a plurality of charge/discharge cycles in an electrochemical cell wherein the starting material forms the cathode, and is coupled via a compatible electrolyte with a compatible anode, the electrolyte having an intrinsic electrolysis voltage threshold greater than the threshold voltage for activation of the cathode.

4,366,216

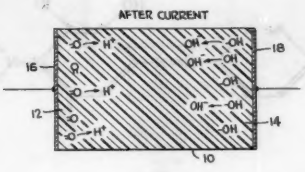
ELECTRICAL ENERGY STORAGE

John E. McGinness, Houston, Tex., assignor to MB-80 Energy Corporation, Houston, Tex.

Filed Jan. 2, 1981, Ser. No. 222,018

Int. Cl.³ H01M *4/60*

U.S. Cl. 429—213 **15 Claims**



1. A rechargeable electrical energy storage device comprising

a pair of spaced electrodes; and

an oxidation-reduction polymer material coated on said electrodes to store a charge when an electrical current is supplied thereto.

4,366,217

MOTION PICTURE FILM HAVING DIGITALLY CODED SOUNDTRACK AND METHOD FOR PRODUCTION THEREOF

George Bird, 85 Red Hill Rd., Princeton, N.J. 08540, and Peter A. Custer, P.O. Box 100, Newtown, Bucks County, Pa. 18940

Division of Ser. No. 88,465, Oct. 26, 1979, Pat. No. 4,308,327. This application Jun. 29, 1981, Ser. No. 278,688

Int. Cl.³ G03G *5/04*

U.S. Cl. 430—11 **5 Claims**

1. An exposed and developed motion picture release print, comprising:

a base;

at least one visible silver image or color image layer on the base;

a two layer soundtrack image substrate substantially colorless and transparent to visible light comprising a conductive underlayer on the base and a dielectric or photoconductive overlayer contacting the underlayer, said soundtrack image sustrate overlaying at least a portion of the visible image;

wherein the soundtrack layer contains electrostatically imaged digitally coded soundtrack images which overlie the visible images; and

the digitally coded soundtrack images are of a material which is colorless and transparent under visible light and capable of fluorescing under ultraviolet light.

4,366,218

PHOTOGRAPHIC PRODUCTS AND PROCESSES EMPLOYING NOVEL NONDIFFUSIBLE BRIDGED AZDAMINOPHENOL MAGENTA DYE-RELEASING COMPOUNDS AND PRECURSORS THEREOF

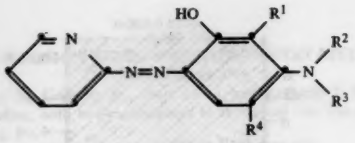
Richard B. Anderson, and Norman W. Kalenda, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 282,613, Jul. 13, 1981. This application Mar. 5, 1982, Ser. No. 355,029

Int. Cl.³ C09B 45/00; G03C 1/40

U.S. Cl. 430—17 10 Claims

1. A photographic element comprising a support having thereon a coordination complex of a polyvalent metal ion and a compound having the formula:



wherein:

(a) R^1 represents hydrogen;

(b) R^2 represents an alkyl group of 1 to about 6 carbon atoms; or

R^1 and R^2 represent an alkylene group which can be taken together with the atoms to which they are attached to complete a 5- or 6-membered heterocyclic ring;

(c) R^3 represents an alkyl group of 1 to about 6 carbon atoms;

(d) R^4 represents hydrogen; or

R^3 and R^4 represent an alkylene group which can be taken together with the atoms to which they are attached to complete a 5- or 6-membered heterocyclic ring;

with the proviso that at least one of said 5- or 6-membered heterocyclic rings is present in said complex.

4,366,219

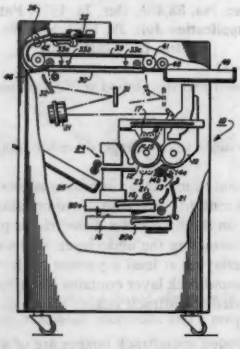
SCANNING OPTICS COPIER WITH VARIABLE PITCH COPY CAPABILITY

Jack Beery, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 8, 1981, Ser. No. 223,512

Int. Cl.³ G03G 15/00; G03B 27/32

U.S. Cl. 430—31 1 Claim



1. In a reproduction machine having a scanning device for projecting images of documents onto a photosensitive surface, a copy sheet supply for providing sets of variable size copy sheets to receive the images from the photosensitive surface, registration rolls to drive the copy sheets into engagement with the photosensitive surface, a paper feed registration switch disposed near the drive rolls, and a counter, the counter responsive to the registration switch, the method of operating the reproduction machine including the steps of

starting the scanning device for the first copy of a reproduction run,

activating the registration rolls, the leading edge of a copy sheet being in the nip of the rolls, the copy sheet communicating with the registration switch,

counting the time for the trailing edge of the copy sheet to reach the registration switch, the time being a function of the counts in the counter,

terminating the scanning device,

determining the time period for the scanning device for the next copy sheet to be reproduced in response to the length of the first copy sheet, including subtracting a given number from the count in the counter, starting the scanning device, and

terminating the scanning device at the end of said time period.

4,366,220

ELECTROSTATIC IMAGE RECORDING PROCESS USING PREHISTERESIS UNIFORM CHARGING AND LIGHT EXPOSURE PRETREATMENT

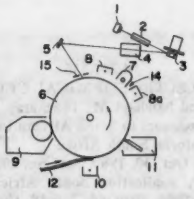
Itaru Saito, Toyokawa, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Mar. 20, 1981, Ser. No. 245,751

Claims priority, application Japan, Mar. 27, 1980, 55-40029; Aug. 22, 1980, 55-116281

Int. Cl.³ G03G 13/22

U.S. Cl. 430—31 10 Claims



1. An image-forming method which comprises: sequentially subjecting a photosensitive member to a plurality of prehysteresis operations, each comprising electrostatically charging said member and thereafter uniformly exposing the same to light until the photosensitivity of the photosensitive member is substantially stabilized, said photosensitive member comprising a photoconductive layer prepared from a dispersion of a photoconductive material including cadmium sulfide in a resin binder formed over a conductive substrate; and subsequently forming successive images with said member.

3. In an image-forming method suitable for image exposure under wavelengths of about 700 to 850 nm, the steps of using a photosensitive member including a photoconductive layer formed over a conductive base, said layer having been prepared from a dispersion of a photoconductive material selected from the group consisting essentially of (a) $CdS{\cdot}nCdCO_3$ ($0<n\leqq 4$), (b) $CdS_xSe_{1-x}{\cdot}nCdCO_3$ ($0.1\leqq x<1$; $0<n\leqq 4$), (c) CdS and (d) $(CdS)_x(CdSe)_{1-x}{\cdot}nCdCO_3$ ($0.1\leqq x\leqq 0.99$; $0<n\leqq 4$) in a resin binder; sequentially subjecting said photosensitive member to a plurality of prehysteresis operations, each comprising electrostatically charging said member and thereafter uniformly exposing the same to light until the photosensitivity of the photosensitive member is substantially stabilized, the amount of said uniform light exposure being in the

range of from about 1 to about 30 lux-sec when said photoconductive material (a) is used, about 6.5 to about 60 lux-sec when said photoconductive material (b) is used, about 7.5 to about 75 lux-sec when said photoconductive material (c) is used, and about 5 to about 150 lux-sec when said photoconductive material (d) is used; and subsequently forming successively images on the member by uniform charging and image exposure.

4,366,221
PHOTOGRAPHIC RECORDING MATERIAL AND NEW MEROCYANINES

Hans Öhlschläger, Bergisch Gladbach, and Hans Langen, Bonn, both of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

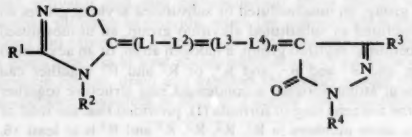
Filed Apr. 24, 1981, Ser. No. 257,239

Claims priority, application Fed. Rep. of Germany, May 3, 1980, 3017069

Int. Cl.³ G03C *1/84*

U.S. Cl. 430—507 **9 Claims**

1. Light-sensitive photographic material comprising a support layer, having at least one supported light-sensitive silver halide emulsion layer, wherein at least one filter layer contains at least one filtering compound corresponding to the following formula:



(I)

in which

R^1 represents

(1) a saturated or unsaturated alkyl or cycloalkyl group which may be substituted or

(2) an aryl group which may be substituted;

R^2 represents a saturated or unsaturated alkyl group which may be substituted

R^3 represents

(1) an alkyl or cycloalkyl group which may be substituted;

(2) an aryl group which may be substituted,

(3) the group $COOR^5$ or

(4) the group $CO—NR^6R^7$;

R^4 represents

(1) an alkyl group which may be substituted,

(2) a heterocyclic group which may be substituted or

(3) an aryl group which may be substituted;

R^5, R^6, R^7, which may be the same or different, represent

(1) hydrogen,

(2) an alkyl group which may be substituted or

(3) an aryl group which may be substituted and/or

R^6 and R^7 may together represent the ring members required to complete a heterocyclic ring;

L^1, L^2, L^3 and L^4 which may be the same or different represent a methine group which may be substituted, and

n=0 or 1

provided that compound I contains at least one water-solubilizing group.

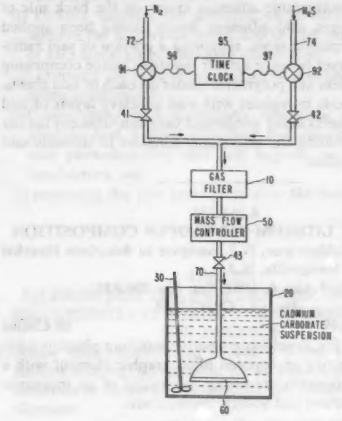
4,366,222
CADMIUM SULFIDE/CADMIUM CARBONATE/CADMIUM OXIDE PHOTOCONDUCTOR PRODUCED BY HIGH TEMPERATURE, INERT ATMOSPHERE CALCINATION

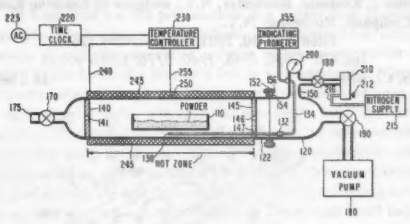
Morris Feinleib, Los Altos, Calif., assignor to Varian Associates, Palo Alto, Calif.

Continuation of Ser. No. 14,383, Feb. 21, 1979, abandoned, which is a division of Ser. No. 814,512, Jul. 11, 1977, abandoned. This application Oct. 22, 1981, Ser. No. 313,791

Int. Cl.³ G03G *5/087*

U.S. Cl. 430—127 **9 Claims**





1. A method for making a cadmium chalcogenide-cadmium carbonate electrophotoconductive plate comprising the steps of:

adding hydrogen sulfide gas, hydrogen selenide gas, or a gas comprising a mixture of hydrogen sulfide and hydrogen selenide to a cadmium carbonate suspension;

drying and breaking up the resultant product into a fine powder;

calcining the powder in an inert gas at between about 250 and about 310 degrees centigrade to produce a photoconductive powder comprising cadmium sulfide, between zero and four moles of cadmium carbonate for each mole of cadmium sulfide, and between 0.05 and 1.5 mole percent of cadmium oxide, said powder being substantially free of ionic contaminants;

mixing the photoconductive powder with binder and solvents to form a paste; and

coating the paste onto a relatively more conductive substrate to produce an electrophotoconductive plate.

4,366,223

PROCESS OF FORMING PERMANENT OPTICAL LAMINATION OF COLOR PROOFS

Gerald W. Larson, P.O. Box 33427, St. Paul, Minn. 55133

Continuation-in-part of Ser. No. 76,823, Sep. 19, 1979, abandoned. This application Mar. 9, 1981, Ser. No. 241,511

Int. Cl.³ G03F 9/00; G03C 7/00, 11/12

U.S. Cl. 430—143 5 Claims

1. A process for forming a laminated, imaged, color proofing sheet comprising individually exposing four separate color proofing sheets to imagewise distributed radiation, each sheet comprising a radiation sensitive layer on a transparent carrier layer of between 1.25×10^{-5} and 1.25×10^{-4} m with at least three of said sheets having transparent, non-tacky, non-pressure-sensitive, activatable adhesive layers on the back side of said carrier layers, said adhesive layers having been applied prior to said exposing steps, removing a portion of said radiation sensitive layer to leave a color half-tone image comprising a dye or a pigment in a polymeric binder on each of said sheets, placing said sheets in register with said adhesive layers of said at least three sheets being positioned between adjacent carrier layers, and activating the activatable adhesive to laminate said four sheets together.

4,366,224

INORGANIC LITHIUM DEVELOPER COMPOSITION

Shane Hsieh, Bridgewater, N.J., assignor to American Hoechst Corporation, Somerville, N.J.

Filed Aug. 6, 1981, Ser. No. 290,634

Int. Cl.³ G03C 1/58

U.S. Cl. 430—149 10 Claims

1. A method for developing positive working photographic elements by treating an exposed photographic element with a developer composition consisting essentially of an inorganic lithium composition and sodium metasilicate.

4,366,225

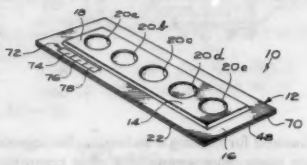
MONITORING DEVICE WITH PROCESSING SOLUTION RESERVOIRS

James J. Kosinski, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 30, 1981, Ser. No. 259,126

Int. Cl.³ G03C 1/48, 1/40, 5/16; G03B 41/16

U.S. Cl. 430—207 14 Claims



11. Device for monitoring exposure to invisible radiation, comprising:

a transparent support;

a plurality of layers on said support including (1) a mordant layer, (2) a layer opaque to visible radiation, and (3) a layer including material sensitive to invisible radiation and a dye producing material;

a mask sheet over said layers and having a plurality of apertures, each aperture demarcating a zone of said layers;

a cover sheet over said mask sheet and having openings open to said apertures respectively;

a plurality of reservoirs of processing composition disposed for discharge into said openings in the cover sheet respectively; and

means sealed to said cover sheet for covering said reservoirs and forming paths for flow of processing composition from said reservoirs to respective openings in said cover sheet.

4,366,226

COLOR PHOTOGRAPHIC SENSITIVE MATERIAL WITH SULFONAMIDOPHENOL SCAVENGER

Tsutomu Hamaoka; Osamu Takahashi; Tooru Harada; Minoru Sakai, and Nobutaka Ohki, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

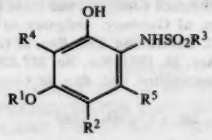
Filed Jul. 22, 1981, Ser. No. 285,721

Claims priority, application Japan, Jul. 22, 1980, 55/100287

Int. Cl.³ G03C 1/40, 1/10, 5/54

U.S. Cl. 430—214 11 Claims

1. A color photographic silver halide light-sensitive material comprising a compound represented by formula (I)



(I)

wherein R^1 and R^3 can each represent an unsubstituted or substituted alkyl group or an unsubstituted or substituted aryl group, R^3 being a group which produces no colored by-products and causes no oxidization reaction, R^2 can represent an unsubstituted or substituted alkyl group, R^4 and R^5 can each represent a hydrogen atom, an unsubstituted or substituted alkyl group, an unsubstituted or substituted aryloxy group, an unsubstituted or substituted alkylthio group, an unsubstituted or substituted arylthio group, a halogen atom, or an acylamino group, and R^1 and R^2, and R^4, or R^2 and R^5 together can represent atoms forming a condensed ring structure together with the benzene ring of formula (I), provided that the total of carbon atom numbers in R^1, R^2, R^3, R^4 and R^5 is at least 16, said light-sensitive material further comprising a dye image-receiving layer.

4,366,227

DIFFUSION TRANSFER FILM UNIT

Michael Berger, Chestnut Hill, and John J. Magenheimer, Wellesley, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Jun. 26, 1981, Ser. No. 277,921

Int. Cl.³ G03C 1/40, 5/54, 1/90, 1/48

U.S. Cl. 430—215 30 Claims

1. A diffusion transfer film unit comprising a support, a photosensitive silver halide emulsion layer, an image-receiving layer and, intermediate said silver halide emulsion layer and said image-receiving layer, a release layer comprising a water-soluble polymer and a styrenated acid functional acrylic resin possessing an ester cleavable by alkaline processing composition to form a salt and possessing sufficient acid function to provide solubility in a weak base of pH less than 10.

2. The film unit of claim 1 wherein said image-receiving layer is a dyeable image-receiving layer and said film unit includes a dye-image-forming material.

4,366,228
PHOTOPOLYMERIZABLE COMPOSITIONS FEATURING NOVEL CO-INITIATORS

Donald P. Specht; Conrad G. Houle, and Samir Y. Farid, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

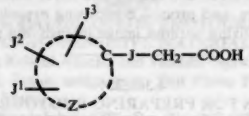
Division of Ser. No. 184,606, Sep. 5, 1980, Pat. No. 4,289,844, which is a continuation-in-part of Ser. No. 49,661, Jun. 18, 1979, abandoned. This application May 11, 1981, Ser. No. 262,675

Int. Cl.³ G03C 1/68

U.S. Cl. 430—281 **8 Claims**

1. In a photopolymerizable composition comprising an addition-polymerizable compound containing ethylenic unsaturation and a co-initiator composition comprising a photosensitizer and a photopolymerization activator responsive in the presence of the photo-excited form of said photosensitizer to form a free radical;

the improvement wherein said activator has the structure:



wherein:

J is —O—, —S— or a carbon-to-carbon bond;

J^1, J^2, and J^3 are each independently hydrogen; alkyl, alkoxy, or alkylthio having from 1 to 5 carbon atoms; aryloxy having from 6 to 10 carbon atoms; halogen; or any two of J^1, J^2, and J^3 taken together comprise the atoms necessary to complete a 5- or 6-membered fused heterocyclic or aromatic ring; and

Z is the number of atoms necessary to complete a heterocyclic or aromatic ring of from 4 to 6 ring atoms;

said activator and said photosensitizer being present in an amount sufficient to provide, when the composition is coated, dried and exposed to a medium-pressure mercury light source, a speed which is at least about one-fifth that of the same composition coated, dried and exposed identically except with a co-initiator consisting of Michler's ketone and benzophenone.

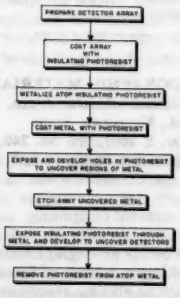
4,366,229
METHOD OF MAKING COLD SHIELD FOR INFRARED DETECTOR ARRAY

Wallace L. Freeman, Woodbridge, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 6, 1981, Ser. No. 318,766

Int. Cl.³ C23F 1/02

U.S. Cl. 430—312 **2 Claims**


PREPARE DETECTOR ARRAY
COAT ARRAY WITH INSULATING PHOTORESIST
METALIZE ATOP INSULATING PHOTORESIST
COAT METAL WITH PHOTORESIST
EXPOSE AND DEVELOP HOLES IN PHOTORESIST TO UNCOVER REGIONS OF METAL
ETCH AWAY UNCOVERED METAL
EXPOSE INSULATING PHOTORESIST THROUGH METAL AND DEVELOP TO UNCOVER DETECTORS
REMOVE PHOTORESIST FROM ATOP METAL

1. A method of applying a cold shield to an array of photodetectors and their associated read-out conductors on one side of a substrate, including the steps of:

(a) coating said photodetector, said read-out conductors, and said one side substrate with an electrically insulating photoresist;

(b) metalizing said photoresist;

(c) applying atop the metal a thin layer of photoresist;

(d) exposing said thin layer of photoresist through a mask having perforations corresponding to regions including and closely surrounding said photodetectors and to regions on said read-out conductors;

(e) developing said thin layer to produce perforations therethrough in accordance with said mask whereby regions of said metal are uncovered;

(f) etching through the perforations of said thin layer to remove the uncovered metal and to thus uncover regions of said electrically insulating photoresist;

(g) exposing the uncovered regions of said electrically insulating photoresist;

(h) developing said electrically insulating photoresist to uncover said regions including and closely surrounding said photodetectors and said regions on said read-out conductors, and

(i) removing the thin layer from atop the metal.

4,366,230
METHOD FOR THE PREPARATION OF HIGHLY HEAT-RESISTANT RELIEF STRUCTURES AND THE USE THEREOF

Hellmut Ahne, Röttenbach; Eberhard Kühn, Hemhofen, and Roland Rubner, Röttenbach, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jun. 4, 1981, Ser. No. 270,357

Claims priority, application Fed. Rep. of Germany, Jun. 10, 1980, 3021787

Int. Cl.³ G03C 5/00

U.S. Cl. 430—325 **11 Claims**

1. In a method for the preparation of a highly heat-resistant relief structure having a polymer base of heterocyclic structure wherein a radiation-sensitive soluble polymer precursor is applied in the form of a film or a foil to a substrate, the film or foil is irradiated through negative patterns with actinic light or by deflecting a light, electron or ion beam, and the non-irradiated film or foil portions are removed, the improvement comprising using as said polymer precursor a polymeric compound consisting of the addition product of (a) a cyclic carboxylic acid anhydride and (b) a hydroxyl group-containing compound, said hydroxyl group-containing compound itself being an addition product of (a) an olefinically unsaturated monoepoxide and (b) a member selected from the group consisting of:

(1) a carboxyl group-containing polyaddition product of (i) an aromatic and/or heterocyclic tetracarboxylic acid dianhydride and (ii) a diamino compound or a diamino compound with at least one ortho-position amido group;

(2) a carboxyl group-containing polyaddition product of (i) a member selected from an aromatic and/or heterocyclic dihydroxydicarboxylic acid or an aromatic and/or heterocyclic diaminodicarboxylic acid and (ii) a diisocyanate;

(3) an amino group-containing polycondensation product of (i) an aromatic and/or heterocyclic tetraamino compound and (ii) a dicarboxylic acid chloride or ester;

(4) an amino group-containing polyaddition product of (i) an aromatic and/or heterocyclic tetraamino compound and (ii) a tetracarboxylic acid dianhydride; and

(5) a hydroxyl group-containing polycondensation product of (i) an aromatic and/or heterocyclic dihydroxydiamino compound and (ii) a dicarboxylic acid chloride or ester.

4,366,231

PHOTOGRAPHIC MATERIAL CONTAINING A STABILIZER, A PROCESS FOR ITS PRODUCTION, A DEVELOPMENT PROCESS, NEW PYRAZOLES, A PROCESS FOR THEIR PRODUCTION AND INTERMEDIATE PRODUCTS

Karl H. Mayer, deceased, late of Leverkusen, Fed. Rep. of Germany (by Hildegard E. Mayer, Annedore Mayer, Andrea Mayer, heirs); Klaus Sasse, Bergisch Gladbach, and Anita von König, Krefeld, both of Fed. Rep. of Germany, assignors to Agfa Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

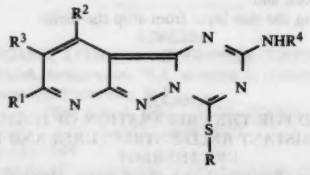
Filed Jan. 9, 1981, Ser. No. 223,746

Claims priority, application Fed. Rep. of Germany, Jan. 17, 1980, 3001498

Int. Cl.³ G03C *1/34*

U.S. Cl. 430—375 7 Claims

1. A photographic material comprising a support layer and, applied thereto, at least one light sensitive silver halide emulsion layer and, optionally, further layers, wherein at least one layer contains a compound corresponding to formula (I) below:



(I)

in which

R represents alkyl, alkenyl, aryl, aralkyl or cycloalkyl;

R^1, R^2 and R^3 which may be the same or different, represent hydrogen, alkyl, aryl, cycloalkyl or aralkyl;

R^4 represents hydrogen or $—COR^5$;

R^5 represents alkyl, aryl, cycloalkyl, aralkyl or $—OR^6$ and

R^6 represents alkyl, aryl, cycloalkyl or aralkyl said compound being present in an amount sufficient to stabilize said photographic material against fogging.

4,366,232

METHOD FOR PROCESSING PHOTOGRAPHIC SILVER DYE-BLEACH MATERIALS AND SUITABLE PREPARATIONS

Hansjörg Buser, Marly, and Adolf Morand, Villars-sur-Glane, both of Switzerland, assignors to Ciba-Geigy Ltd., Basel, Switzerland

Filed Feb. 17, 1981, Ser. No. 235,388

Claims priority, application Switzerland, Feb. 22, 1980, 1435/80

Int. Cl.³ G03C *7/00*

U.S. Cl. 430—390 19 Claims

1. A method for processing exposed and developed photographic silver dye-bleach materials, by treating the exposed and developed material with aqueous bleaching preparations which contain (a) an adduct of an acid amide of a low-molecular aliphatic acid or of a monocylic aromatic acid or of a diamide of carbonic acid or thiocarbonic acid or of a lactam of γ- δ- or ε-aminoacids and a strong mineral acid, (b) a silver-complexing agent, (c) one or more bleach catalysts, (d), optionally an antioxidant, (e) optionally a water-soluble oxidising agent and (f) optionally a bleaching accelerator, wherein (a) is a solid water-soluble adduct of an acid amide of a lactam and a strong mineral acid.

4,366,233

BLIX PROCESS FOR SILVER HALIDE COLOR PHOTOGRAPHIC MATERIALS

Kotaro Nakamura, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 26, 1981, Ser. No. 266,768

Claims priority, application Japan, May 26, 1980, 55-69971

Int. Cl.³ G03C *7/00*

U.S. Cl. 430—393 3 Claims

1. A process of blixing an exposed color-developed silver halide color photographic material comprising a support having coated thereon a cyan coloring silver halide emulsion layer as the outermost coloring silver halide emulsion layer, a magenta coloring silver halide emulsion layer, and a yellow coloring silver halide emulsion layer; said process carried out by means of a blix bath contaminated with a developing agent comprising the steps of: preparing said layers such that there are 0.6 g/m^2 or less of silver in the silver halide emulsion layers disposed closer to the support from the cyan coloring silver halide emulsion layer; and blixing said silver halide color photographic layers, said process comprising exposing, color developing and blixing without image intensifying processing.

4,366,234

PROCESS FOR PREPARING PHOTOGRAPHIC SOLUTIONS CONTAINING HYDROQUINONE MONOSULPHONATE

John B. Wheatcroft, and Edward N. Wall, both of Chesterfield, England, assignors to Staveley Chemicals Limited, Chesterfield, England

Filed May 29, 1981, Ser. No. 268,476

Claims priority, application United Kingdom, Jun. 5, 1980, 8018524

Int. Cl.³ G03C *5/30*

U.S. Cl. 430—485 8 Claims

1. A process for making a photographic solution containing hydroquinone monosulphonate, said process comprising the steps of (a) forming an aqueous solution containing hydroquinone, a salt of sulphurous acid and hydrogen peroxide, and (b) causing the hydroquinone, the salt of sulphurous acid and the hydrogen peroxide in the aqueous solution to react to form hydroquinone monosulphonate.

4,366,235

PHOTOSENSITIVE ELEMENT AND METHOD OF PREPARING SAME

Edwin H. Land, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Feb. 17, 1981, Ser. No. 234,937

Int. Cl.³ G03C *1/76*

U.S. Cl. 430—496 102 Claims

1. A photosensitive element comprising a support carrying single effective photosensitive silver halide grains in a substantially predetermined, regular, geometric spaced array wherein said single effective grains are substantially free of physical contact with one another.

4,366,236

PHOTOGRAPHIC MATERIALS

Osamu Takahashi, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 5, 1981, Ser. No. 240,668

Claims priority, application Japan, Mar. 5, 1980, 55-28253

Int. Cl.³ G03C *1/76*

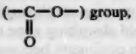
U.S. Cl. 430—505 10 Claims

1. A photographic material comprising:

a support;

a plurality of silver halide photographic emulsion layers on said support, said layers capable of forming silver images by processing with an alkaline processing composition in the presence of a silver halide developing agent after light-exposure;

an interlayer disposed between said silver halide photographic emulsion layers, said interlayer comprising a mixture of hydroquinone derivatives having a solidifying point below 100° C., and a water-insoluble organic solvent-soluble homopolymer or copolymer comprising a main chain or a side chain which includes a recurring unit, said recurring unit including a



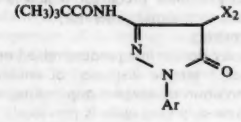
combined particles of said derivatives and said homopolymer or copolymer dispersed in a hydrophilic organic colloid.

4,366,237
SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

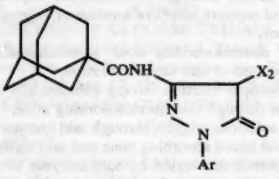
Seiji Ichijima; Keiichi Adachi, and Tadashi Ogawa, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 6, 1981, Ser. No. 280,603
Claims priority, application Japan, Jul. 4, 1980, 55-91570
Int. Cl.³ G03C *1/40*
U.S. Cl. 430—505 **16 Claims**

1. A silver halide color photographic light-sensitive material comprising a support having thereon at least one silver halide emulsion layer, said photographic material containing a 5-pyrazolone magenta coupler represented by formula (II) or formula (III)



(II)



(III)

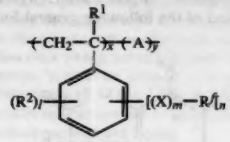
wherein Ar represents a phenyl group which may be substituted with one or more substituents selected from a halogen atom, an alkyl group, an alkoxy group and an acylamino group; and X_2 represents an alkylthio or aralkylthio group having from 2 to 30 carbon atoms which may be substituted or an arylthio group having from 6 to 30 carbon atoms which may be substituted.

4,366,238
SILVER HALIDE PHOTOGRAPHIC MATERIALS

Shigeki Yokoyama, and Kunihiko Ohga, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 25, 1981, Ser. No. 277,375
Int. Cl.³ E03C *1/78, 1/72*
U.S. Cl. 430—529 **8 Claims**

1. A silver halide photographic material, comprising: a support; a plurality of photographic layers on the support, wherein at least one of said layers comprises a water-insoluble polymer having a recurring unit represented by formula (I)



(I)

wherein A represents a monomer unit formed by copolymerizing a copolymerizable monomer having at least one ethylenically unsaturated group; R^1 represents hydrogen, a halogen atom, or an alkyl group having 1 to 3 carbon atoms; R^2 can represent a monovalent substituent, and, when l is more than one, two R^2 groups together can represent an atomic group forming a ring; R represents an alkyl group having 1 to 30 carbon atoms, an aralkyl group, an aryl group, or an alkylaryl group, wherein at least four hydrogens have been substituted with a fluorine atom; X represents a divalent coupling group shown by $-(R)_p-L-$, wherein R represents an alkylene group, an arylene group, or an aralkylene group; L represents an oxy group, a thioxy group, an imino group, a carbonyl group, a carboxy group, a carbothioxy group, a carboxyamido group, an oxycarbonyl group, a carbamoyl group, a sulfone group, a sulfonamido group, an N-alkyl-sulfonamido group, a sulfamoyl group, a sulfoxy group, or a phosphate group; and p is 0 or 1; l is an integer of 0 to 4; m is an integer of 0 to 3; n is an integer of 1 to 5; x is 1 to 100 mol%; and y is 0 to 99 mol%.

4,366,239
POLYESTER BASE DRAFTING FILM WITH NITROCELLULOSE AND POLYMETHYLMETHACRYLATE LAYER

Yukio Shinagawa; Sumio Ohtani; Koichi Suematsu, and Hideo Kawaguchi, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 195,272, Oct. 8, 1980, abandoned. This application Jan. 15, 1982, Ser. No. 339,799
Claims priority, application Japan, Oct. 8, 1979, 54/129774
Int. Cl.³ G03C *1/78*
U.S. Cl. 430—533 **12 Claims**

1. A drafting film comprising a hydrophobic polyesterfilm support having formed thereon a matte layer comprising silicon dioxide as a matting agent and a mixture of (i) polymethylmethacrylate or a copolymer thereof having a molecular weight of about 10,000 to about 500,000 and (ii) nitrocellulose wherein the nitrocellulose is used in a mixing ratio of about 5 to 50% by weight based on total weight of the polymethyl methacrylate or a copolymer thereof and the nitrocellulose and the dry coverage of the above components is:

matting agent from 1 to 20 g/m²,

polymethyl methacryalte or a copolymer thereof from 1 to 10 g/m², and

nitrocellulose from 0.5 to 10 g/m².

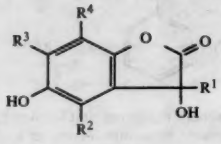
4,366,240
COLOR PHOTOGRAPHIC RECORDING MATERIAL CONTAINING NON-DIFFUSING ELECTRON DONOR PRECURSOR COMPOUNDS

Wolfgang Lässig; Ernst Meier, and Siegfried Schleger, all of Munich, Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 17, 1981, Ser. No. 234,880
Claims priority, application Fed. Rep. of Germany, Feb. 20, 1980, 3006268
Int. Cl.³ G03C *5/54*; G07C *49/62*; G09B *53/00*
U.S. Cl. 430—542 **7 Claims**

1. Color photographic recording material having at least one light-sensitive silver halide emulsion layer and, associated thereto, a non-diffusing electron donor precursor compound (ED precursor compound) from which a non-diffusing ED

compound is formed under alkaline development conditions, wherein the improvement comprises said ED precursor compound is a compound of the following general formula



in which

R^1 represents a carbocyclic or heterocyclic aromatic group,

R^2, R^3 and R^4 which may be the same or different substituents, represent hydrogen, alkyl, alkenyl, aryl, alkoxy, alkylthio or amino, or

R^3 and R^4 together complete a condensed carbocyclic ring, and at least one of the substituents R^1, R^2, R^3 and R^4, contains a ballast group having 10 to 22 carbon atoms which confers diffusion resistance.

4,366,241

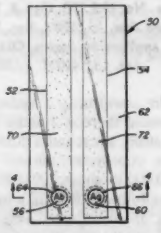
CONCENTRATING ZONE METHOD IN HETEROGENEOUS IMMUNOASSAYS

Henry K. Tom, La Honda, and Gerald L. Rowley, Cupertino, both of Calif., assignors to Syva Company, Palo Alto, Calif.

Filed Aug. 7, 1980, Ser. No. 176,177

Int. Cl.[3] **G01N** *33/54, 33/16;* **C12Q** *1/70*

U.S. Cl. 435—7 **34 Claims**



1. An immunoassay method for determining an analyte which is a member of an immunological pair, defined as a mip, consisting of ligand and its homologous antiligand, said method employing in combination as assay device and a signal producing system;

said assay device characterized by an immunosorbing zone comprising mip non-diffusively bound to at least a portion of a bibulous support serving as an inlet port for liquids into said device; and a liquid absorbing zone in liquid receiving relationship with said immunosorbing zone; and

a signal producing system characterized by being capable of producing a detectible signal in said immunosorbing zone and having one component conjugated to a mip to provide a signal label-mip conjugate, wherein the amount of signal label producing said detectible signal in said immunosorbing zone is related to the amount of analyte;

said method comprising:

contacting said assay device in a predetermined order with: (a) a solution of a sample suspected of containing said analyte; and (b) a solution of components of said signal producing system other than components bound to said assay device, wherein said immunosorbing zone is immersed in said sample solution;

flowing said sample solution of substantially constant composition through said immunosorbing zone;

whereby said solutions migrate through said immunosorbing zone into said liquid absorbing zone resulting in an amount of signal label-mip conjugate becoming bound to said mip bound to said support in relation to the amount of analyte in said sample and affording production of a detectable signal in said immunosorbing zone; and

determining said detectable signal.

15. An immunoassay method for determining an analyte which is a member of an immunological pair, defined as a mip, consisting of ligand and its homologous antiligand, said method employing in combination an assay device and a signal producing system;

said assay device characterized by an immunosorbing zone comprising mip non-diffusively bound to at least a portion of a bibulous support serving as an inlet port for liquids into said device; and a liquid absorbing zone in liquid receiving relationship with said immunosorbing zone and at least partially enclosed to prohibit contact with liquids except through said immunosorbing zone;

said signal producing system characterized by being capable of producing a detectible signal in said immunosorbing zone and having (1) an enzyme as a signal label conjugated to a mip to provide an enzyme-mip conjugate, wherein the amount of enzyme producing said detectible signal in said immunosorbing zone is related to the amount of analyte, and (2) a signal generator precursor which is enzymatically transformed to a signal generator;

said method comprising:

contacting said assay device in a predetermined order with: (a) a solution of a sample suspected of containing said analyte; (b) a solution of enzyme-mip conjugate, except when said enzyme-mip conjugate is previously bound to said assay device through complexation with said mip bound to said support; and (c) a solution of a signal generator precursor,

wherein said immunosorbing zone is substantially completely immersed in said sample solution;

flowing said sample solution having substantially constant composition through said immunosorbing zone;

whereby said solutions migrate through said immunosorbing zone into said liquid absorbing zone and said signal generator precursor is converted by said enzyme to a signal generator producing a detectible signal in said immunosorbing zone; and

determining said detectable signal.

22. An immunoassay method for determining an analyte which is a member of an immunological pair, defined as a mip, consisting of ligand and its homologous antiligand, said method employing in combination an assay device and a signal producing system;

said assay device characterized by an immunosorbing zone comprising mip non-diffusively bound to a bibulous support serving as a inlet port for liquids into said device; and a liquid absorbing zone in liquid receiving relationship with said immunosorbing zone and at least partially enclosed to prohibit contact with liquids except through said immunosorbing zone;

said signal producing system characterized by being capable of producing a detectible signal in said immunosorbing zone and having a fluorescer as signal label conjugated to a mip to provide a fluorescer-mip conjugate, wherein the amount of fluorescer producing said detectible signal in said immunosorbing zone is related to the amount of analyte;

said method comprising: contacting said assay device in a

predetermined order with: (a) a solution of a sample suspected of containing said analyte; (b) a solution of fluorescer-mip conjugate, except when said fluorescer-mip conjugate is bound to said assay device prior to combining with said sample solution; and (c) a wash solution, except when said fluorescer-mip conjugate is bound to said assay device prior to combining with said sample solution,

whereby said solutions migrate through said immunosorbing zone into said liquid absorbing zone and said fluorescer-mip conjugate is bound in said immunosorbing zone in relation to the amount of analyte in said sample; and

determining the fluorescence from said immunosorbing zone.

4,366,242

METHOD AND AGENT FOR THE IMMUNOLOGICAL DETERMINATION OF ENZYMES

Siegfried Neumann, Seeheim-Jugenheim; Norbert Hennrich, Darmstadt; Hans-Dieter Orth, Bickenbach; Gerhard Pfleiderer, Stuttgart, all of Fed. Rep. of Germany; Evangelista Jockers-Wretou, Athens, Greece, and Hans Pauly, Dautphetal, Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschränkter Haftung, Darmstadt, Fed. Rep. of Germany

Filed Dec. 29, 1980, Ser. No. 221,105

Claims priority, application Fed. Rep. of Germany, Dec. 27, 1979, 2952478

Int. Cl.[3] **G01N** *33/54;* **C12Q** *1/42*

U.S. Cl. 435—7 **7 Claims**

1. A process for the quantitative immunological determination of an isoenzyme of the acid or alkaline phosphatase in body fluid, comprising incubating anti-isoenzyme antibodies which are absorbed on a water-insoluble carrier, with the sample solution containing the isoenzyme, whereby the isoenzyme bonds to the antibodies but retains a measurable reproducible proportion of its activity in its complex with the antibodies; removing the sample solution; washing the antibody carrier which is charged with isoenzyme; and determining the activity of the isoenzyme bonded to the antibodies.

4,366,243

STABILIZATION OF GLUCOSE OXIDASE APOENZYME

Patricia A. Rupchock, and Richard J. Tyhach, both of Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Apr. 17, 1981, Ser. No. 255,310

Int. Cl.[3] **C12N** *9/04, 9/96;* **C12Q** *1/26, 1/40, 1/44, 1/46, 1/48, 1/56*

U.S. Cl. 435—7 **5 Claims**

1. A stabilized glucose oxidase apoenzyme composition comprising glucose oxidase apoenzyme and a stabilizing agent comprising poly(vinyl alcohol) and bovine serum albumin.

3. A composition for determining the presence of a ligand in, or the ligand binding capacity of, a liquid test sample, comprising reagents for a homogeneous specific binding assay system capable of producing a detectable response which is a function of the presence of said ligand or said ligand binding capacity, wherein one of said reagents is glucose oxidase apoenzyme, and a stabilizing agent comprising poly(vinyl alcohol) and bovine serum albumin.

4,366,244

METHOD FOR MEASURING SERUM CHOLESTEROL

Marc Pascal, Dijon, France, assignor to Laboratoires Goella, Paris, France

Continuation of Ser. No. 53,885, Jul. 2, 1979, abandoned. This application Mar. 16, 1981, Ser. No. 243,690

Claims priority, application United Kingdom, Jul. 4, 1978, 28815/78; Jan. 22, 1979, 7902255

Int. Cl.[3] **C12Q** *1/60, 1/26, 1/46*

U.S. Cl. 435—11 **23 Claims**

1. A method of determining the cholesterol content of LDL and VLDL lipoproteins in a serum containing the same together with HDL lipoproteins which comprises:

(A) contacting the serum with a solution of concanavalin A wherein the concentration of concanavalin A in said solution is less than 10 mg/ml calculated with respect to undiluted serum, in such an amount as to selectively precipitate substantially all of the LDL and VLDL lipoproteins contained in said serum but to leave HDL lipoproteins in the resultant supernatant liquid;

(B) separating said precipitate from said supernatant liquid;

(C) treating said precipitate so as to denature proteins therein which interfere with measurement of the cholesterol content of lipoprotein in said precipitate;

(D) eliminating serum constituents such as bilirubin and urea derivatives which are liable to interfere with the measurement of the content of cholesterol by contacting the cholesterol in the precipitate with a selective solubilizing agent; and

(E) determining the cholesterol content of the isolated precipitate.

4,366,245

METHOD FOR THE ISOLATION OF SYMBIOTIC MICROORGANISMS FROM HOST PLANTS USING AN OSMIUM TETRAOXIDE FIXATIVE

Maurice Lalonde, c/o The Charles F. Kettering Research Laboratory, 150 E. South College St., Yellow Springs, Ohio 45387

Filed Dec. 3, 1980, Ser. No. 212,395

Int. Cl.[3] **C12Q** *1/24*

U.S. Cl. 435—30 **7 Claims**

1. A process for isolating symbiotic microorganisms from host plants comprising the steps of:

(a) contacting root tissue taken from said host plants with an aqueous solution of osmium tetraoxide for a time sufficient to effect sterilization of the surface and subsurface area of said root tissue but insufficient to kill all of said symbiotic microorganisms,

(b) rinsing said root tissue to remove osmium tetraoxide and to terminate the progress of sterilization,

(c) dividing said root tissue into a plurality of samples containing said symbiotic microorganisms, and

(d) transferring said samples to a growth medium to provide a pure culture of said symbiotic microorganisms.

4,366,246

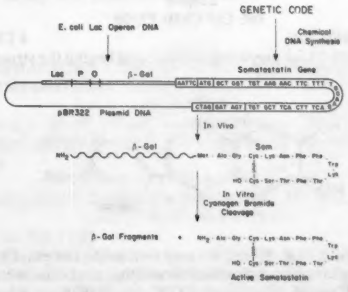
METHOD FOR MICROBIAL POLYPEPTIDE EXPRESSION

Arthur D. Riggs, La Verne, Calif., assignor to Genentech, Inc., So. San Francisco, Calif.

Continuation-in-part of Ser. No. 849,591, Nov. 8, 1977, abandoned. This application Nov. 2, 1979, Ser. No. 90,980

Int. Cl.[3] **C12P** *21/00;* **C12N** *15/00, 1/00*

U.S. Cl. 435—68 **16 Claims**



1. In the method of producing a specific polypeptide involv-

ing expression of a heterologous structural gene therefor in a recombinant microbial cloning vehicle, the method comprising the steps of growing microbial transformants comprising such structural gene-containing vehicles and expressing the amino acid sequence encoded by such gene, the improvement wherein the structural gene is in reading phase with a DNA sequence coding for a protein other than said polypeptide so that expression yields a precursor protein comprising both the amino acid sequence of the polypeptide and additional protein containing a selective cleavage site adjacent the amino acid sequence of said specific polypeptide.

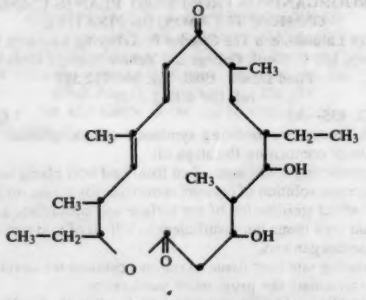
4,366,247

PROCESS FOR PREPARING TYLACTONE

Richard H. Baltz, Indianapolis, Ind., and Eugene T. Seno, Norwich, England, assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Jul. 2, 1980, Ser. No. 162,977
Int. Cl.³ C12N *1/20*; C12P *17/08*
U.S. Cl. 435—124 5 Claims

1. A process for preparing tylactone, which has the formula:



which comprises cultivating *Streptomyces fradiae* NRRL 12188 or a tylactone-producing mutant or recombinant thereof in a culture medium containing assimilable sources of carbon, nitrogen, and inorganic salts under submerged aerobic fermentation conditions until a substantial recoverable amount of compound is produced.

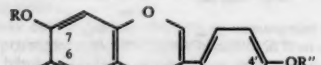
4,366,248

FERMENTATION METHOD OF PREPARING ANTIOXIDANTS

Fritz W. Zilliken, Remagen, Fed. Rep. of Germany, assignor to Z-L Limited Partnership, Janesville, Wis.

Division of Ser. No. 29,122, Apr. 11, 1979, Pat. No. 4,264,509, which is a continuation-in-part of Ser. No. 804,594, Jun. 8, 1977, Pat. No. 4,157,984. This application Jan. 19, 1981, Ser. No. 226,509
Int. Cl.³ C12P *17/06*
U.S. Cl. 435—125 4 Claims

1. A method for preparing a compound having the structure:



wherein each of R, R' and R" may be a methyl or ethyl group or hydrogen which comprises fermenting soybeans with the fungus *Rhizopus oligosporus* ATCC No. 22925 or *Rhizopus oryzae* ATCC No. 9363, contacting the resulting fermented soybean product with methanol to separate from said fermented soybean product an extract containing said compound and recovering said compound in substantially pure form from said methanol extract.

4,366,249

STORAGE STABLE CHOLESTEROL OXIDASE COMPOSITIONS

Waldemar Thum; Gunter Lang; Hellmuth Vetter, and Gotthilf Näher, all of Tutzing, Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Fed. Rep. of Germany

Continuation of Ser. No. 903,316, May 5, 1978, abandoned. This application Jan. 15, 1982, Ser. No. 339,760
Claims priority, application Fed. Rep. of Germany, Dec. 14, 1977, 2755799
Int. Cl.³ C12N *9/96, 9/04*
U.S. Cl. 435—188 5 Claims

1. Storable aqueous cholesterol oxidase compositions comprising cholesterol oxidase, a buffer and from 2 to 3.5 M of sodium chloride or potassium chloride as a stabilizing agent.

4,366,250

PREPARATION PROCESS OF OPTICALLY ACTIVE α-AMINATED ACIDS BY BIOLOGICAL HYDROLYSIS OF NITRILES

Jean C. Jallageas, Montpellier; Alain Arnaud, Clermont L'Herault, and Pierre Galzy, Montpellier, all of France, assignors to Anvar, Paris, France

PCT No. PCT/FR80/00008, § 371 Date Sep. 24, 1980, § 102(e) Date Sep. 19, 1980, PCT Pub. No. WO80/01571, PCT Pub. Date Aug. 7, 1980
PCT Filed Jan. 24, 1980, Ser. No. 209,402
Int. Cl.³ C07B *19/02*
U.S. Cl. 435—280 7 Claims

1. A process for the preparation of L-alpha-amino acid from the corresponding racemic alpha-amino-nitrile in free form or as salt comprising hydrolizing in a single step in liquid medium racemic alpha-amino-nitrile in free form or as a salt with a bacteria having a general nitrilase and a L-stereospecific amidase and isolating the L-alpha amino acid from the D-alpha-amino amide.

4,366,251

GLASS COMPOSITIONS AND THEIR FIBERS

Charles F. Rapp, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Jun. 15, 1981, Ser. No. 273,816
Int. Cl.³ C03C *13/00, 3/04*
U.S. Cl. 501—36 14 Claims

1. Mineral wool fibers having a composition consisting essentially by weight of:

	Weight Percent
SiO_2	38–42
Al_2O_3	6–10
MgO	12–16
CaO	35–40
Fe_2O_3	≦2
Other impurities	≦2

wherein the composition consists of akermanite modified with Al_2O_3;

wherein the composition has a viscosity of log n=1.0 at a temperature of 2600° F. or less, and

wherein the fibers have a high softening temperature as indicated by a viscosity of log n=12.0.

4,366,252

FLUORINE-FREE, ZIRCONIA-FREE, X-RAY ABSORBING SILICA BASED GLASS, CONTAINING OXIDES OF LEAD, BARIUM AND STRONTIUM PLUS OXIDES OF CALCIUM, MAGNESIUM, SODIUM, POTASSIUM, CERIUM, TITANIUM, ARSENIC AND ANTIMONY

Edward A. Weaver, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Mar. 13, 1980, Ser. No. 129,949
Int. Cl.³ C03C *3/04, 3/10*; H01J *1/00*
U.S. Cl. 501—60 3 Claims

1. A fluorine-free and zirconia-free glass having a linear absorption coefficient of at least 28 and substantially the following composition in weight percent:

Lead oxide	4½%
Barium oxide	5%
Strontium oxide	8%
Na_2O	7%
K_2O	7½%
Silica	61½%
Aluminum oxide	1%
Calcium oxide	3%
Magnesium oxide	½%
Titanium oxide	½%
Antimony oxide	½%
Arsenic oxide	½%
Cerium oxide	½%.

4,366,253

PHOSPHATE GLASS COMPOSITIONS, AND GLASS-CERAMIC MATERIALS, AND METHODS OF MAKING THE SAME

Motohiko Yagi, Odawara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 11, 1980, Ser. No. 176,837
Claims priority, application Japan, Aug. 10, 1979, 54-101241
Int. Cl.³ C03C *3/04, 3/08*
U.S. Cl. 501—63 11 Claims

1. A phosphate glass composition capable of melting at about 1500° C. or lower consisting essentially of from 8 to 35 wt.% P_2O_5, from 8 to 48 wt.% SiO_2 and GeO_2, provided that the GeO_2 content is not more than 6 wt.%, from 3 to 18 wt.% B_2O_3, from 16 to 28 wt.% Al_2O_3, and from 8 to 33 wt.% CaO, MgO, SrO, and BaO, provided that the sum of the MgO, SrO, and BaO contents is not more than 15 wt.%, and 0 to 12 wt.% of a metal or metal oxide nucleating agent selected from the group consisting of TiO_2, ZrO_2, CeO_2, Au and Ag, and further wherein the ratio of the amount of CaO to the sum of the amount of CaO, MgO, SrO and BaO is more than 58 wt.% and the ratio of the sum of the CaO, MgO, SrO and BaO contents to the P_2O_5 content ranges from 1.02/1 to 1.4/1 and wherein the amount of the alkali metal oxide is less than 1%, said phosphate glass composition yielding a transparent glass which is characterized by a specific gravity ranging from about 2.5 to about 2.9, a dilatometric transformation temperature ranging from about 450° C. to about 750° C. and an average linear coefficient of thermal expansion in the temperature range of 100° C. to 300° C. ranging from about 40×10^{-7} to about 90×10^{-7} cm/cm°C.

10. A phosphate glass composition capable of melting at about 1500° C. or lower consisting essentially of 32.7 wt.% P_2O_5, 9 wt.% SiO_2, 4.5 wt.% B_2O_3, 22.5 wt.% Al_2O_3, 25.8 wt.% CaO and 5.4 wt.% TiO_2.

4,366,254

HIGH TOUGHNESS CERAMIC CUTTING TOOL

Dennis J. Rich, Troy, and Frederick C. Holtz, Jr., Birmingham, both of Mich., assignors to The Valeron Corporation, Troy, Mich.

Continuation-in-part of Ser. No. 141,102, Apr. 17, 1980, abandoned. This application May 1, 1981, Ser. No. 259,560
Int. Cl.³ C04B *35/44, 35/48, 35/56, 35/58*
U.S. Cl. 501—89 23 Claims

1. A high toughness ceramic composition consisting essentially of a dense, homogeneous sintered body consisting essentially of, on a volume percent basis, about 4 to about 20% zirconia, about 60 to about 90% alumina, and about 3 to about 30% of a refractory metal compound selected from the group consisting of: the carbides, nitrides and carbo-nitrides of the Group IVB and VB metals of the periodic table; the carbides of the Group VIB metals of the periodic table; and mixtures of any of the foregoing refractory metal compounds, said composition further characterized in containing less than 1% total of the iron group metals and mixtures thereof.

11. A high toughness ceramic cutting tool consisting essentially of a dense, homogeneous body of a composition consisting essentially of, on a volume percent basis, about 4 to about 20% zirconia, about 60 to about 90% alumina, and about 3 to about 30% of a refractory metal compound selected from the group consisting of: the carbides, nitrides and carbonitrides of the Group IVB and VB metals of the periodic table; the carbides of the Group VIB metals of the periodic table; and mixtures of any of the foregoing refractory metal compounds, said composition further characterized in containing less than 1% total of the iron group metals and mixtures thereof.

4,366,255

HIGHLY REINFORCED REFRACTORY CONCRETE WITH 4-20 VOLUME % STEEL FIBERS

David R. Lankard, Columbus, Ohio, assignor to Wahl Refractory Products, Company, Fremont, Ohio

Filed Mar. 23, 1981, Ser. No. 246,507
Int. Cl.³ C04B *35/02*
U.S. Cl. 501—95 12 Claims

1. A refractory shape comprising a refractory concrete reinforced with greater than about 4% by volume of metal fibers said concrete containing a refractory aggregate having a maximum particle size of about 35 mesh or less.

7. A process for reinforcing a refractory shape which comprises:

(a) preparing an aqueous slurry of a refractory concrete containing refractory aggregate having a maximum particle size of 35 mesh or less and a superplasticizer,
(b) placing a bed of metal fibers in a mold, wherein said bed of metal fiber is about 4 to 20% by volume of said mold,
(c) adding said slurry to said fibers while vibrating the mold such that said refractory concrete fills said mold and uniformly infiltrates said bed of metal fibers,
(d) allowing said refractory concrete to harden, and
(e) drying the refractory shape obtained.

4,366,256

REFRACTORY CHROME-MAGNESIA BRICKS AND COMPOSITIONS MADE FROM GRANULAR FUSED MATERIAL

Günther L. Mortl, Villach, Austria, assignor to Osterreichisch-Amerikanische Magnesit Aktiengesellschaft, Carinthia, Austria

Filed Mar. 11, 1981, Ser. No. 242,600
Claims priority, application Austria, Mar. 20, 1980, 1507/80
Int. Cl.³ C04B *35/04, 35/42*
U.S. Cl. 501—115 9 Claims

1. Refractory chrome-magnesite bricks and compositions composed of a granular fused material having a grain size of 12 mm or less, and a content of from 71 to 83 wt.% Cr_2O_3 and from 17 to 29 wt.% MgO, the minimum content of Cr_2O_3 and

MgO being 94 wt.%, wherein said granular fused material includes a coarse grain fraction of at most 12 mm and a fine grain fraction of at most 0.2 mm, said fine grain fraction comprising from 30 to 42 wt.% of said granular fused material.

4,366,257

PROCESS FOR PRODUCING A CALCIA CLINKER

Yuichi Suzukawa; Waichi Kobayashi, and Satoshi Ohtaka, all of Ube, Japan, assignors to Ube Industries, Ltd., Yamaguchi, Japan

Filed Jun. 3, 1981, Ser. No. 269,882
Int. Cl.³ C04B 35/02
U.S. Cl. 501—123 6 Claims

6. A calcia clinker which has been produced by preparing an admixture, in the form of fine particles having a specific surface area of at least 5,000 cm^2/g determined by the Blaine permeability method, of (1) calcia which has been prepared by calcining a lime material comprising mainly at least one calcium compound at a temperature of 800° C. to 1300° C., and (2) an additive comprising (A) 0.5 to 3% by weight, in terms of oxide and based on the weight of CaO contained in said calcia, of a first component consisting of at least one inorganic compound containing an element selected from the group consisting of titanium, aluminum and silicon and, (B) 0.5 to 2% by weight, based on the weight of CaO contained in said calcia, of calcium fluoride; and

sintering said admixture at a temperature of from 1200° to 1650° C.

4,366,258

BLAST FURNACE WITH A REFRACTORY LINING OF CONCRETE COMPONENTS

Rudolf Eschenberg, Dinslaken, Fed. Rep. of Germany, assignor to Thyssen Aktiengesellschaft, Duisburg, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 261,620, May 7, 1981, abandoned, which is a continuation of Ser. No. 103,426, Dec. 14, 1979, abandoned. This application Dec. 15, 1981, Ser. No. 330,796
Claims priority, application Fed. Rep. of Germany, Dec. 20, 1978, 2854998
Int. Cl.³ C04B 35/02
U.S. Cl. 501—124 3 Claims

1. A blast furnace having a refractory lining comprising preformed refractory concrete components each having a volume of at least 0.2 m^3 with a fixed shape and wherein the cement portion of the concrete consists of the following:

A. 10 to 30% by weight of a mineral alkaline earth compound selected from the class consisting of metallurgical slags containing calcium-monoaluminate, calcium-dialuminate and calcium-silico-aluminate, alumina-containing cements of the type calcium mono-aluminate and calcium di-aluminate, alumina-containing silicate cements, silicates of calcium or barium, and alkaline earth oxides selected from the class consisting of magnesium oxide, dolomite, calcium oxide and barium oxide;

B. 14 to 54% by weight of a compound selected from the class consisting of silicon oxide, chromium oxide, titanium dioxide, zirconium oxide and aluminum oxide having a particle size of from 100 A to 0.1 μm;

C. 14 to 54% by weight of an inert filler material with a particle size of from 1 and 100 μm;

the sum of constituents B. and C. amounting to from 70 to 90% by weight

4,366,259

PRODUCTION OF ACETIC ACID AND PROPIONIC ACID AND THEIR ESTERS

John F. Knifton, Austin, and Jiang-Jen Lin, Round Rock, both of Tex., assignors to Texaco, Inc., White Plains, N.Y.

Filed Oct. 29, 1981, Ser. No. 316,195
Int. Cl.³ C07C 27/06
U.S. Cl. 518—700 28 Claims

1. A process for making acetic acid and propionic acid and their esters that comprises contacting a mixture of CO and H_2 with a catalyst system comprising a ruthenium-containing compound and a cobalt halide selected from the group consisting of cobalt(II) chloride, cobalt(II) bromide and cobalt(II) iodide dispersed in a low melting quaternary phosphonium or ammonium base or salt at a pressure of about 500 psig or greater and at a temperature of at least about 150° C. for a sufficient time to provide said carboxylic acids and their esters.

4,366,260

CATALYSTS FOR METHANOL SYNTHESIS

Mark S. Wainwright, Randwick; Warwich L. Marsden, North Sydney, and Jan B. Friedrich, Asquith, all of Australia, assignors to Unisearch Limited, Kensington, Australia

Division of Ser. No. 213,542, Dec. 5, 1980. This application Aug. 25, 1981, Ser. No. 296,222
Claims priority, application Australia, Dec. 17, 1979, PE1743
Int. Cl.³ C07C 27/06, 31/04
U.S. Cl. 518—713 3 Claims

1. A method for the production of methanol, or a mixture of methanol and dimethyl ether, comprising contacting a gaseous mixture of carbon monoxide or carbon dioxide, or a mixture thereof, with hydrogen, with a catalyst prepared by forming an alloy containing from 35% to 60% by weight of aluminum, from 0.1% to 25% by weight of zinc, and the remainder being substantially all copper, and extracting a substantial proportion of the aluminum content of the alloy with an aqueous solution of an alkali metal hydroxide.

4,366,261

CHROMIUM OXIDE IN ION EXCHANGE RESIN

Alvin F. Beale, Jr., Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Mar. 27, 1981, Ser. No. 248,656
Int. Cl.³ B01J 41/00
U.S. Cl. 521—25 7 Claims

1. A composite comprising a particulate, porous anion exchange resin having incorporated therein amorphous hydrous chromium III oxide conforming substantially to the empirical formula $Cr_2O_3 \cdot mH_2O$ where mH_2O signifies waters of hydration.

4,366,262

METHOD FOR CATALYZED CONVERSION OF PERFLUOROCARBON CATIONIC EXCHANGE FUNCTIONALITY WITH SF_4

Michael J. Covitch, Cleveland Hts., Ohio, assignor to Diamond Shamrock Corporation, Dallas, Tex.

Filed Jun. 26, 1981, Ser. No. 277,885
Int. Cl.³ B01J 39/20
U.S. Cl. 521—33 18 Claims

1. A method for forming sulfonyl fluoride functional groups within a polymeric material having at least one of: (a) attached sulfonyl based catonic exchange functional groups; and (b) sulfonyl based polymeric cross linking sites; comprising the step of: contacting the polymer with SF_4 and a catalyst at a temperature of between −20° C. and 200° C. for greater than 0.10 hour under pressure in a substantial excess of the catalyst.

4,366,263

EXPANDED CROSS-LINKED POLYETHYLENE PARTICLE, A MOLDED PRODUCT THEREOF AND THE METHODS THEREOF

Eiya Sato, and Tsukasa Yamagishi, both of Suzuka, Japan, assignors to Asahi-Dow Limited, Tokyo, Japan

Filed Dec. 5, 1980, Ser. No. 213,643

Claims priority, application Japan, Dec. 10, 1979, 54-160144; Apr. 25, 1980, 55-55000; Apr. 25, 1980, 55-55001; Apr. 25, 1980, 55-55002; Apr. 25, 1980, 55-55003; Apr. 25, 1980, 55-55004; Apr. 26, 1980, 55-55809; Jun. 30, 1980, 55-88611; Jun. 30, 1980, 55-88612; Jun. 30, 1980, 55-88613; Oct. 20, 1980, 55-146535

Int. Cl.³ C08J *9/22, 9/24*

U.S. Cl. 521—60 3 Claims

1. An expansion-molded product of cross-linked polyethylene, said expansion-molded product:

(1) being a number of expanded cross-linked polyethylene particles having a thick skin layer, which particles are closely contacted and adhered to each other at the skin layers of adjacent particles to form a foam having a density of 0.025 to 0.05 g/cm^3,

(2) having a substantial average thickness of the interfacial membranes, which are formed by thermally fusing and welding the particle surfaces together, being approximately not lower than 3 times the thickness, as compared with the substantial average thickness of cell membranes in each particle,

(3) having a melting point of 107° to 124° C.,

(4) having a compressure stress (R) kg/cm^2 required for 25% compression which satisfies the equation:

$$1/140\ (270-6/D) \leqq R \leqq 1/140\ (315-6/D)$$

wherein D means density g/cm^3,

(5) having a cavity coefficient, which represents smoothness of the surface of the product, if not higher than 10,

(6) having a water absorption ratio of not higher than 0.3% by volume,

(7) having a head resistant compressive creep at 80° C. of not higher than 35% by thickness, and

(8) having a dimensional change ratio after standing at 90° C. for 96 hours of not higher than 2% by length.

4,366,264

USE OF CALCIUM METASILICATE (WOLLASTONITE) AS A FORMALDEHYDE SUPPRESSANT FOR UREA FORMALDEHYDE RESINS

Stanley Wawzonek, 2014 Ridgeway Dr., Iowa City, Iowa 52240

Filed Apr. 16, 1982, Ser. No. 369,148

Int. Cl.³ C08J *9/30*

U.S. Cl. 521—122 7 Claims

1. A urea-formaldehyde foamed insulation composition prepared from a first and second component, said first component comprising an aqueous solution of a foaming agent and said second component comprising an aqueous solution of a pre-condensate urea-formaldehyde resin,

said second component containing as a formaldehyde decomposition suppressant, a small but suppression effective amount of a calcium metasilicate.

4,366,265

STARCH-AMINE-BASED POLYETHER POLYOLS AND POLYURETHANE FOAMS PREPARED THEREFROM

Stephen Fuzesi, Hamden, and John G. Bayusik, Wallingford, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Division of Ser. No. 218,870, Dec. 22, 1980, Pat. No. 4,342,864. This application Apr. 14, 1982, Ser. No. 368,333

Int. Cl.³ C08G *18/14, 18/50*

U.S. Cl. 521—167 13 Claims

1. In a polyurethane foam comprised of the reaction product of a polyol reactant, an organic polyisocyanate reactant, a reaction catalyst and a foaming agent, the improvement wherein said polyol reactant is prepared by:

a. forming a crude polyglucoside reaction product by reacting in the presence of a catalytic proportion of an acid catalyst,

(1) starch and

(2) a polyhydric alcohol containing at least two hydroxyl groups, the proportion of said alcohol being at least 0.3 mole of alcohol per glucose unit weight of starch, and

b. admixing said crude polyglucoside reaction product with an amine in the presence of a basic catalyst, maintaining said mixture at a temperature of from 100° to 165° C., and introducing into said mixture an alkylene oxide having between 2 and about 6 carbon atoms, said amine being employed in an amount of at least about 0.1 mole to about 10 moles per glucose unit weight of starch and being selected from the group consisting of an aliphatic amine having 1–8 carbon atoms, an aromatic primary amine having 6–8 carbon atoms, an alkanolamine in which each alkanol group contains 2–5 carbon atoms, and a mixture thereof.

4,366,266

BINDER COMPOSITIONS AND PROCESS FOR MAKING MOLDED PRODUCTS THEREWITH

Tom Mitsopoulos, Toronto; Satish Jhaveri, Oakville, and Charles Lui, Mississauga, all of Canada, assignors to Valvoline Oil & Chemicals Ltd., Mississauga, Canada

Filed Jul. 14, 1981, Ser. No. 283,262

Claims priority, application United Kingdom, Feb. 5, 1981, 8103522

Int. Cl.³ B22C *1/22, 9/02;* B28B *7/34;* C08L *91/00*

U.S. Cl. 523—143 29 Claims

1. A binder composition including in admixture a resin component comprising an organic solvent solution of a non-aqueous phenolic resin, a hardener component comprising a liquid polyisocyanate containing at least two isocyanate groups, said resin component and hardener component being curable by a curing agent, and an additional component comprising an oil-soluble phenolic resin dissolved in a drying oil and partially cross-linked therewith.

4,366,267

CATALYSTS AND BINDER SYSTEMS FOR MANUFACTURING SAND SHAPES

George S. Everett, Clarendon Hills, Ill., assignor to The Quaker Oats Company, Chicago, Ill.

Filed Dec. 17, 1980, Ser. No. 217,451

Int. Cl.³ C08G *2/30, 4/00*

U.S. Cl. 523—144 9 Claims

1. A process of curing an acid catalyzed resin which comprises admixing with said resin a catalyst selected from the group consisting of aluminum perchlorate, cupric perchlorate and chromic perchlorate.

4,366,268

MOLDING STAND

Akio Yamanishi; Kanichi Sato, and Takashi Higashino, all of Hirakata, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Jun. 23, 1981, Ser. No. 276,700

Claims priority, application Japan, Dec. 21, 1978, 53-156924

Int. Cl.³ C08L *61/04*

U.S. Cl. 523—144 **5 Claims**

1. A molding sand for use in a molding process employing a microwave radiation for curing the molding sand, said molding sand comprising a new sand about 25 to about 75 parts by weight, a carbonized resin coated sand about 75 to about 25 parts by weight and a thermosetting or thermoplastic resin about 2 to 5 parts by weight.

4,366,269

RESIN COATED FOUNDRY SAND USING CRYSTALLINE UNSATURATED POLYESTER AS BINDER

Koue Ohkawa, Yokohama; Shin Fujii, Zama, and Takashi Seino, Yokosuka, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

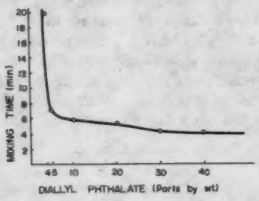
Filed Jun. 6, 1980, Ser. No. 157,191

Claims priority, application Japan, Jun. 9, 1979, 54-71835

The portion of the term of this patent subsequent to Jan. 20, 1998, has been disclaimed.

Int. Cl.³ C08L *67/06*

U.S. Cl. 523—148 **8 Claims**



1. A process of preparing a resin coated sand for forming molds and cores for use in a sand molding process, the process comprising the step of:

mixing a major amount of a foundry sand with a minor amount of a binder composition which comprises a crystalline unsaturated polyester which is solid at room temperature as a principal component thereof and diallyl phthalate, the weight ratio of said diallyl phthalate to said unsaturated polyester being in the range from 5:100 to 30:100, at an elevated temperature at which said binder composition is in a fluidized state in the presence of an organic peroxide which serves as a curing catalyst for said unsaturated polyester, the weight ratio of said organic peroxide to said unsaturated polyester being in the range from 0.1:100 to 10:100, said binder composition being a scarcely tacky solid at room temperature, the viscosity of said binder composition at a temperature about 30° C. above the softening temperature thereof being below about 500 poises.

4,366,270

PROCESS FOR UNIFORMLY BLENDING ADDITIVES INTO THERMOPLASTIC SYNTHETIC RESINS

Jörn Rüter, Marl, Fed. Rep. of Germany, assignor to Chemische Werke Hüls A.G., Marl, Fed. Rep. of Germany

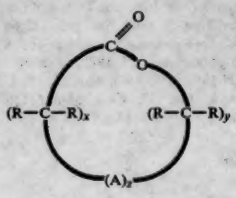
Continuation-in-part of Ser. No. 881,433, Feb. 27, 1978, abandoned. This application Nov. 21, 1979, Ser. No. 96,428

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1977, 2710379

Int. Cl.³ C08K *9/04, 9/10*

U.S. Cl. 523—307 **9 Claims**

1. In a process for the uniform blending of additives into thermoplastic synthetic resins after said thermoplastic synthetic resins have been produced, the improvement comprising dispersing said additives in polymerizable cyclic esters of the general formula:



wherein

R represents respectively hydrogen or an alkyl group having 1–18 carbon atoms,

A represents —O— or —COO— group,

x and y represent integers from 1 to 15,

z represents 0 or 1, and

the concentration of said additives is 1 to 50% by weight of said additives and said cyclic esters,

polymerizing said cyclic esters with said additives dispersed therein at a temperature of about 120° to 350° C. for 5 to 180 minutes to obtain an intermediate product; and

admixing said intermediate product of polymerized cyclic esters and additives having an additive concentration of 0.001 to 15% by weight of said additives, said cyclic esters and said thermoplastic synthetic resins with said thermoplastic synthetic resins in a molten state at a temperature of about 150° to 350° C. for 1 to 30 minutes.

4,366,271

PROCESS FOR THE PRODUCTION OF COLORANT PREPARATIONS AND THE COLORANT PREPARATIONS OBTAINED THEREBY

Albert Riegler, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 99,953, Dec. 3, 1979, abandoned. This application May 26, 1981, Ser. No. 266,790

Claims priority, application Switzerland, Dec. 7, 1978, 12520/78

Int. Cl.³ B01J *2/10*

U.S. Cl. 523—333 **9 Claims**

1. In an improved flush process for the production of a colorant composition, which contains, by weight of the total composition, 10 to 90% of a water-insoluble colorant and 90 to 10% of a water-repellent organic carrier material, which involves mixing a colorant in the presence of water with the organic carrier material, which material has a softening point between 60° and 100° C., in a kneader at a temperature sufficient to melt said organic carrier material and flushing the colorant into the organic carrier material with the concomitant formation of a colorant-free separate water phase, wherein the improvement consists essentially of

(a) mixing the organic carrier material with an aqueous colorant paste or with a dry colorant and water, in a kneader and heating the kneader to a temperature sufficient to melt said organic carrier material, or

adding the organic carrier material, at room temperature, to a kneader preheated to a temperature sufficient to melt said organic carrier material and then adding dry colorant and water or an aqueous colorant paste to the now molten organic carrier material in the heated kneader,

(b) kneading the mixture of colorant, water and molten organic carrier material to flush the colorant into the molten organic carrier material to form a molten colorant composition with the concomitant formation of a colorant-free separate water phase,

(c) now cooling the kneader, while continuing kneading, to

a temperature below the softening point of the organic carrier, a temperature sufficient to cause the molten colorant composition to solidify, and concomitantly

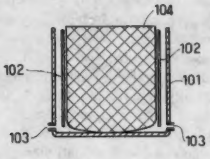
(d) comminuting the solidified colorant composition into broken irregular granulates in the presence of the colorant-free separate water phase.

4,366,272

METHOD FOR RECOVERING SYNTHETIC RESIN EMULSION

Sukeyoshi Kawamura, Tokai; Koichi Shimizu, Aichi, and Yasuhiro Shikimori, Nagoya, all of Japan, assignors to Japan Acrylic Chemical Co. Ltd., Tokyo, Japan

Filed Jun. 16, 1981, Ser. No. 274,161
Claims priority, application Japan, Jun. 17, 1980, 55-82436
Int. Cl.[3] C08J *11/04*
U.S. Cl. 523—335 3 Claims



1. A method for recovering synthetic resin emulsion which comprises; adding coagulant to waste water containing synthetic resin emulsion to coagulate said synthetic resin emulsion, separating the coagulation of said synthetic resin emulsion from said waste water, and redispersing said separated coagulation in synthetic resin emulsion medium by using water-soluble polymer as dispersant.

4,366,273

POLYESTER COMPOSITION WITH MIXED METAL ION NUCLEATING AGENTS

Shaul M. Aharoni, Morris Plains, N.J., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed May 11, 1981, Ser. No. 262,236
Int. Cl.[3] C08J *3/18;* C08L *67/02*
U.S. Cl. 523—400 37 Claims

1. A composition comprising: a linear saturated polyester; and from about 4% to about 10% by weight of the polyester of a nucleating agent comprising a hydrocarbon carboxyl acid neutralized by a first cation selected from metals of Group IA of the Periodic Table of Elements and a second cation selected from metals of Groups IIIA, IIIB, IVB and copper, the first cation being present in an amount less than 50% of the total metal ions and neutralizing not more than 20° C. of the hydrocarbon acid group, and the second cation neutralizing up to 100% of the remaining hydrocarbon acid groups.

4,366,274

AUTO-CROSSLINKABLE, CATHODICALLY DEPOSITABLE BINDERS

Georg Pampouchidis, and Helmut Hönig, both of Graz, Austria, assignors to Vianova Kunstharz, A.G., Werndorf, Austria

Filed Dec. 15, 1980, Ser. No. 216,379
Claims priority, application Austria, Dec. 17, 1979, 7908/79
Int. Cl.[3] C08G *59/50*
U.S. Cl. 523—415 9 Claims

1. Auto-crosslinking, cathodically depositable binders comprising the reaction product of:

(A) the reaction product of:

(a) 2 moles of a diepoxy compound having an epoxy equivalent of at least 100;

(b) 1 mole of an aliphatic and/or cycloaliphatic and/or aromatic diamine, the nitrogen atoms of which are secondary-secondary or primary-tertiary;

(c) 2–1 moles of a secondary amine, and

(d) 0–1 moles of an unsaturated and/or saturated monocarboxylic acid; and

(B) an alpha,beta-ethylenically unsaturated monoisocyanate; the quantity of components being chosen whereby the double bond number of said binder is at least 0.5 and said binder has an amine value sufficient to render said binder water-dilutable upon neutralization with an acid.

4,366,275

WATER-RESISTANT ALKALINE CORRUGATING ADHESIVE COMPOSITION

Michael A. Silano, Somerset, N.J., and Robert D. Featherston, Salisbury, N.C., assignors to National Starch and Chemical Corporation, Bridgewater, N.J.

Filed Jun. 1, 1981, Ser. No. 268,960
Int. Cl.[3] C09J *3/06;* C08J *3/10;* C08L *3/04, 61/02*
U.S. Cl. 524—47 11 Claims

1. In a process for preparing a crosslinking additive for imparting water resistance to starch-based corrugating adhesive compositions wherein acetone and formaldehyde are reacted in a molar ratio of 1 mole of acetone to about 2 to 5.5 moles of formaldehyde under aqueous alkaline conditions at about 20°–80° C. to obtain a water-soluble acetone-formaldehyde condensate containing about 1–10% unreacted formaldehyde, the improvement which comprises adding to said water-soluble acetone-formaldehyde condensate at least an effective amount of dihydroxyethylene urea to react with the unreacted formaldehyde present therein and allowing the reaction to proceed at about 20°–80° C. until the unreacted formaldehyde remaining is reduced to about 0.1–2% by weight.

8. A water-resistant alkaline curing, starch-based corrugating adhesive composition comprising:

A. from about 10 to 40%, based on total weight of the adhesive, of starch, this including the ungelatinized as well as the gelatinized portions of the starch;

B. from about 0.3 to 5%, based on total weight of the starch, of an alkali;

C. from about 54 to 89%, based on total weight of the adhesive, of water; and

D. from about 0.3 to 10%, based on total weight of the starch, dry basis, of a crosslinking additive prepared by reacting acetone and formaldehyde in a molar ratio of 1 mole of acetone to about 2 to 5.5 moles of formaldehyde under aqueous alkaline conditions at about 20°–80° C. to obtain a water-soluble acetone-formaldehyde condensate containing about 1–10% unreacted formaldehyde; adding to the condensate at least an effective amount of dihydroxyethylene urea to react with the unreacted formaldehyde present therein; and allowing the reaction to proceed at about 20°–80° C. until the unreacted formaldehyde remaining is reduced to about 0.1–2% by weight.

4,366,276

FLAME-RESISTANT MOULDING MATERIALS BASED ON THERMOPLASTIC AROMATIC POLYESTERS AND POLYESTER CARBONATES, A PROCESS FOR THEIR PRODUCTION AND THEIR USE IN THE PRODUCTION OF MOULDED BODIES

Dieter Freitag; Werner Nouvertne, both of Krefeld; Klaus Reinking, Wermelskirchen; Peter Tacke, Krefeld; Frank Kleiner, Cologne, all of Fed. Rep. of Germany, and Manfred Schmidt, New Martinsville, W. Va., assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 7, 1981, Ser. No. 274,387
Claims priority, application Fed. Rep. of Germany, Jun. 25, 1980, 3023818; Sep. 19, 1980, 3035357
Int. Cl.[3] C08K *3/16, 5/34*
U.S. Cl. 524—94 6 Claims

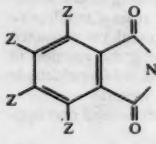
1. Flame resistant moulding materials containing:

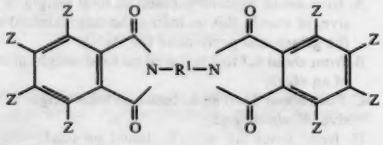
(a) from 92 to 99.98 parts by weight of thermoplastic aromatic polyester or polyester carbonate containing up to 45 mole percent of carbonate moieties based on the total of ester and carbonate moieties and said polyester or polyestercarbonate being based on diphenols, isophthalic acid or terephthalic acid, each of which is unsubstituted or substituted by halogen or alkyl having 1 to 4 carbon atoms;

(b) from 0.01 to 3 parts by weight of at least one inorganic acid salt or organic acid salt wherein said inorganic acid salts are trisodium hexafluoroaluminate, tripotassium hexafluoroaluminate, disodium hexafluorotitanate, dipotassium hexafluorotitanate, disodium hexafluorosilicate, dipotassium hexafluorosilicate, disodium hexafluorozirconate, dipotassium hexafluorozirconate, sodium pyrophosphate, potassium pyrophosphate, sodium metaphosphate, potassium metaphosphate, sodium tetrafluoroborate, potassium tetrafluoroborate, sodium hexafluorophosphate, potassium hexafluorophosphate, sodium ortho-phosphate, potassium ortho-phosphate, or lithium ortho-phosphate, and

said organic acid salts are alkali metal or ammonium salts of organic sulphonic acids, phosphonic acids or carboxylic acids with organic moieties being unsubstituted or substituted by halogen;

(c) from 0.01 to 3 parts by weight of at least one halogenated phthalimide of the formula





wherein

R is hydrogen, alkyl having 1 to 10 carbon atoms, phenyl, naphthyl, C_6H_4X, $C_6H_3X_2$ or $C_6H_2X_3$;

X is fluoro, chloro or bromo;

R^1 is a single bond, alkylene having 2 to 4 carbon atoms, phenylene or p-diphenylene; and

Z is chloro or bromo; and

(d) from 0 to 2.5 parts by weight of polytetrafluoroethylene.

4,366,277

COMPOUNDS HAVING TWO BIS (2,2,6,6-TETRAMETHYL-4-PIPERIDYL)-SUBSTITUTED HETEROCYCLIC RINGS AND POLYMERS CONTAINING SAME

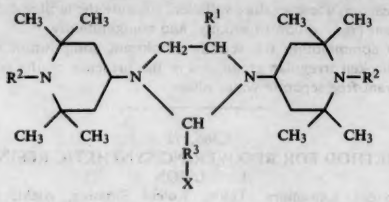
Kenneth R. Molt, Cincinnati, Ohio, assignor to Carstab Corporation, Reading, Ohio

Continuation-in-part of Ser. No. 117,878, Feb. 4, 1980, abandoned. This application Dec. 4, 1981, Ser. No. 326,951

Int. Cl.³ C08K *5/34;* **C07D** *40/19, 211/08*

U.S. Cl. 524—102 **13 Claims**

1. A compound having the following formula:



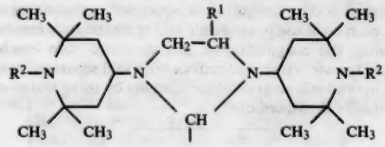
wherein

R^1 is hydrogen or methyl;

R^2 is hydrogen, alkyl having 1 to 8 carbon atoms, unsubstituted aralkyl having 7 to 18 carbon atoms, or aralkyl having 7 to 18 carbon atoms having up to 3 substituents on the aryl ring selected from alkyl having 1 to 4 carbon atoms and alkoxy having 1 to 4 carbon atoms;

R^3 is a straight or branched chain alkylene having 1 to 14 carbon atoms, straight or branched chain alkenylene having 2 to 14 carbon atoms and from 1 to 3 carbon-carbon double bond, unsubstituted arylene having 5 to 7 carbon atoms, cycloalkylene having 5 to 7 carbon atoms, and arylene having 5 to 7 carbon atoms or cycloalkylene having 5 to 7 carbon atoms and having up to three substituents on the arylene or cycloalkylene ring selected from C_1 to C_4 alkyl and C_1 to C_4 alkoxy; and

X is a group having the following formula:



where R^1 and R^2 are as defined above.

4,366,278

FLAME RETARDANT SILICONE RUBBER COMPOSITIONS CONTAINING CARBOXAMIDES

Mitsuo Hamada, Kisarazu, and Sadami Yasuda, Ichihara, both of Japan, assignors to Toray Silicone Co., Ltd., Tokyo, Japan

Filed Mar. 20, 1981, Ser. No. 245,781

Claims priority, application Japan, Mar. 28, 1980, 55-40948

Int. Cl.³ C08L *83/04*

U.S. Cl. 524—210 **22 Claims**

1. A flame retardant silicone rubber composition comprising

(A) 100 parts by weight of a polydiorganosiloxane of the average unit formula

$$R_aSiO_{\frac{4-a}{2}}$$

in which each R is a monovalent radical selected from the group consisting of hydrocarbon radicals and halogenated hydrocarbon radicals and a has a value of from 1.95 to 2.05 inclusive,

(B) 0 to 150 parts by weight of a fine particle silica filler,

(C) 1 to 200 ppm by weight of platinum based on the weight of (A), in the form of platinum or a platinum-containing compound,

(D) 0.01 to 5 parts by weight of carboxamide being formed from an acid selected from a monobasic acid, a multibasic acid, and a hydroxycarboxylic acid which acid is selected from carbonic acid, formic acid, aliphatic carboxylic acids, and aromatic carboxylic acids; which carboxamide is an amide which is a primary amide, a secondary amide,

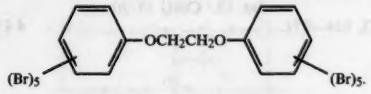
or a tertiary amide in which the amide contains alkyl, aryl, or hydrogen atoms bonded to nitrogen, and
(E) 0.1 to 5 parts by weight of an organic peroxide.

4,366,279
FLAME RETARDANT POLYCARBONATE RESIN COMPOSITION

Tatsuya Tomioka, and Norio Ogata, both of Sodegaura, Japan, assignors to Idemitsu Kosan Company Limited, Tokyo, Japan

Filed Aug. 19, 1981, Ser. No. 294,400
Claims priority, application Japan, Sep. 11, 1980, 55/126201
Int. Cl.[3] C08K *5/37, 5/09, 5/13*
U.S. Cl. 524—289 15 Claims

1. A flame retardant polycarbonate resin composition comprising a polycarbonate resin which is prepared by reacting a dihydric phenol and phosgene or dicarbonate, a nuclear substituted benzoic acid selected from the group consisting of thiosalicylic acid and dihydroxybenzoic acid and an organohalogen compound selected from the group consisting of tetrabromobisphenol A and a compound having the formula



4,366,280
ORGANIC POLYMERIC MATERIALS STABILIZED WITH ACYLATED HYDROXY ACID TYPE COMPOUNDS

Muneaki Yukawa, Tokyo, Japan, assignor to K.K. Musashino Kagaku Kenkyusho, Tokyo, Japan and Ciba-Geigy AG, Basel, Switzerland

Filed Nov. 3, 1980, Ser. No. 203,362
Claims priority, application Japan, Nov. 2, 1979, 54-141172; Apr. 3, 1980, 55-042755
Int. Cl.[3] C08K *5/11*
U.S. Cl. 524—291 5 Claims

1. A stabilized composition comprising an organic polymer selected from the group consisting of
polyolefins,
unsaturated elastomers,
polystyrene and graft copolymers thereof,
polymers which are derived from α,β-unsaturated acids,
polymers derived from unsaturated alcohols and amines,
polyacetals, and
polyamides
having incorporated therein calcium stearoyl lactate.

4,366,281
MOLDING RESIN COMPOSITION

Mitsuo Abe; Akira Kamiya, both of Yokkaichi; Junya Itoh, Mie; Masaaki Mawatari, Suzuka, and Fumio Kurihara, Yokkaichi, all of Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Filed Oct. 29, 1980, Ser. No. 201,777
Claims priority, application Japan, Oct. 29, 1979, 54-138808
Int. Cl.[3] C08K *5/12*
U.S. Cl. 524—297 9 Claims

1. A molding resin composition comprising [A] 100 parts by weight of a vinyl chloride resin, [B] 30–110 parts by weight of a graft copolymer wherein 90–50 parts by weight of a monomer mixture comprising 10–40% by weight of an alkenyl aromatic compound, 20–50% by weight of an alkenyl cyanide compound and 20–50% by weight of a methacrylate, is graft copolymerized on 10–50 parts by weight of polybutadiene or a rubbery copolymer of at least 60% by weight of butadiene with an alkenyl aromatic compound or an alkenyl cyanide compound, the degree of grafting of the graft copolymer being 30–110% and an acetone soluble fraction having an intrinsic viscosity as measured in methyl ethyl ketone at 30° C. of 0.4–1.5 dl/g, [C] 3–50 parts by weight of a rubbery acrylonitrile-butadiene copolymer having from 20–40% by weight acrylontrile and [D] 15–100 parts by weight of a plasticizer for vinyl chloride resins.

8. The molding resin composition according to claim 1, 2 or 5, wherein said plasticizer [D] for vinyl chloride resins is dibutyl phthalate, dioctyl phthalate or diisodecyl phthalate.

4,366,282
AQUEOUS COATING COMPOSITIONS FOR WOOD SURFACES

Herbert Zima, and Laszlo Tulacs, both of Graz, Austria, assignors to Vianova Kunstharz, A.G., Werndorf, Austria

Filed Nov. 5, 1980, Ser. No. 204,158
Claims priority, application Austria, Nov. 9, 1979, 7193/79
Int. Cl.[3] C08K *5/10*
U.S. Cl. 524—317 10 Claims

1. Polymer aqueous dispersions containing N-methylol(-meth)acrylamide and comprising from about
30–65% by weight of methylmethacrylate,
10–17% by weight of ethylacrylate,
10–30% by weight of butylmethacrylate,
5–20% by weight of styrene,
3–10% by weight of N-methylol(meth)acrylamide, and containing from 5 to 15% by weight coalescing agent, based on the said polymer dispersion, of a blend comprising
20-65% by weight of a high boiling paint solvent and
80–35% by weight of ethylene glycol monoethyletheracetate, and/or ethylene glycol monobutyletheracetate.

4,366,283
POLYCARBONATE CONTAINING A METAL SALT OF A PERHALOMETALATE AS AN IGNITION DEPRESSANT

Lowell S. Thomas, and Ronald V. Petrella, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 13, 1979, Ser. No. 93,649
Int. Cl.[3] C08L *3/16*
U.S. Cl. 524—413 8 Claims

1. A composition consisting essentially of an aromatic carbonate polymer having dispersed therein a metal salt of a perhalometalate in an amount of about 0.1 weight percent based on the polymer or less which amount is sufficient to retard combustion when the composition is exposed to a low temperature ignition source, said metal salt being represented by the formula:

$$M_yM'X_z$$

wherein M is alkali metal; M' is a transition metal; X is fluoro, chloro or bromo; z is a whole number which corresponds to the coordination number of M'; and y is a whole number equal to the valence of $M'X_z$, provided that when the metal salt is K_2TiF_6 it is present in an amount from about 0.02 to about 0.05 weight percent based on the polymer, said composition having Underwriter's Laboratories' (UL-94) flame retardance rating of V-1 or V-0 as determined using a test bar having the following dimensions: 12.7 cm×1.27 cm×0.32 cm.

4,366,284

AQUEOUSLY-SWELLING WATER STOPPER AND A PROCESS OF STOPPING WATER THEREBY

Yoshinobu Ishido, and Hideo Tanaka, both of Fukuyama, Japan, assignors to Hayakawa Rubber Company Limited, Fukuyama, Japan

Filed Jan. 21, 1981, Ser. No. 226,896

Claims priority, application Japan, Oct. 17, 1980, 55/145358; Oct. 17, 1980, 55/145359

Int. Cl.³ C08J *3/12, 3/20;* **C08K** *3/34;* **C08L** *61/00*

U.S. Cl. 524—447 **7 Claims**

1. Aqueously-swelling water-stopping composition consisting of 10 to 40 weight % of rubber whose main ingredient is reclaimed rubber blended with less than 30 weight % of virgin rubber, 10 to 20 weight % of silicic compound, 10 to 60 weight % of bentonite, said silicic compound and bentonite acting as fillers and said silicic compound being selected from the group consisting of silicic acid anhydride, hydrous silicic acid, and calcium silicate, and 10 to 40 weight % of rubber plasticizer.

4,366,285

PROCESS FOR THE PRODUCTION OF AN ELASTOMER-FILLER MIXTURE OPTIONALLY CONTAINING EXTENDER OILS

Wolfgang Lukaschek, Marl, and Wolfgang Marx, Dueimen, both of Fed. Rep. of Germany, assignors to Chemische Werke Huls, A.G., Marl, Fed. Rep. of Germany

Filed Jul. 13, 1981, Ser. No. 282,772

Int. Cl.³ C08L *9/00;* **C08K** *3/36*

U.S. Cl. 524—521 **11 Claims**

1. In a process for producing an elastomer-filler mixture, optionally containing an extender oil comprising the combined precipitation of a homogeneous mixture of

(a) a synthetic elastomer latex, produced by emulsion polymerization in an anionic emulsifier system, and

(b) an aqueous suspension of a silicic acid based filler,

using an acid and, optionally, an electrolyte or other flocculant; separation of the precipitated mixture; and drying of the mixture;

the improvement wherein the filler suspension contains 0.1–5% by weight, based on the amount of filler, of a copolymer of acrylamide and dimethylaminoethyl methacrylate.

4,366,286

COATING AGENT FOR NON-STICK COATINGS

Hans Friemann; Hans-Heinrich Moretto; Heinrich Alberts, all of Cologne; Armand de Montigny, and Hans Toepsch, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 5, 1980, Ser. No. 204,680

Claims priority, application Fed. Rep. of Germany, Nov. 28, 1979, 2947965

Int. Cl.³ C08L *51/08, 83/04*

U.S. Cl. 524—588 **6 Claims**

1. In a coating composition for producing non-stick coatings which have increased peeling forces and by weight consisting essentially of

(A) about 10 parts of a polyorganosiloxane with hydroxyl end groups and with a viscosity of 10^2 to 5×10^4 Pas,

(B) 0.5–5 parts of at least one cross-linking agent of the formula

$$RSiX_3$$

wherein

X is a hydrolyzable group and

R is an alkyl, alkenyl, aryl or aminoalkyl group with 1–12 C atoms,

(C) 0.1–2 parts of an organic tin compound as the crosslinking catalyst and

(D) 100–500 parts by weight of a volatile organic solvent, the improvement which comprises additionally including

(E) 0.1–20 parts of a graft copolymer comprising

(i) 25–75% of an essentially linear polyorganosiloxane with hydroxyl end groups and with a viscosity of 100 to 500,000 mPas and

(ii) 10–70% of at least one organic polymer with a molecular weight of 500 to 100,000, linked to (i) via bridges formed on the free radical polymerization of

(iii) 10–60% of one or more monomers containing at least one aliphatic double bond, the sum of (i) to (iii) being 100%.

4,366,287

GLASS FIBRE/SYNTHETIC RESIN PASTE OR SLURRY

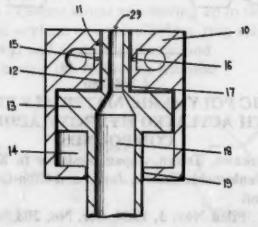
David Thorpe, Blackley, England, assignor to Imperial Chemical Industries Limited, London, England

Division of Ser. No. 21,427, Mar. 16, 1979, Pat. No. 4,288,563. This application Apr. 29, 1981, Ser. No. 258,807

Claims priority, application United Kingdom, Mar. 23, 1978, 11674/78; Feb. 15, 1979, 7905423

Int. Cl.³ C08G *18/30*

U.S. Cl. 524—871 **4 Claims**



1. Chopped fibre glass suitable for use in making a glass fibre paste or slurry, said glass having been made by:

(a) forming into strands filamentary glass which has been coated with a size containing, as the main ingredient, one component of a plastics forming mixture or a derivative thereof, and

(b) chopping said strands into short lengths, the chopped fibre glass being characterized as substantially separable into individual lengths when added to a liquid medium which is compatible with plastics-forming ingredients or all or part of one or more of said plastics-forming ingredients.

4,366,288

PULVERULENT COATING MATERIALS

Raoul Resz, Bergisch-Gladbach; Walter Schäer, Cologne, and Aziz El Sayed, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 23, 1980, Ser. No. 199,697

Claims priority, application Fed. Rep. of Germany, Oct. 27, 1979, 2943469

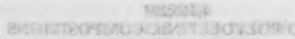
Int. Cl.³ C08F *8/00, 16/06, 26/04, 116/06*

U.S. Cl. 525—60 **4 Claims**

1. Pulverulent coating materials melting at from 60° to 150° C., consisting of

(a) from 50 to 99% by weight of saponified ethylene-vinyl acetate copolymers, which contain ethylene and vinyl acetate in molar ratios of from 2:1 to 20:1 before saponification and which are saponified to hydrolysis levels of from 50 to 100%, and

(b) from 1 to 50% by weight of polycarbodiimides, having cross-linking activity above 130° C., of the general formula (1):



(1)

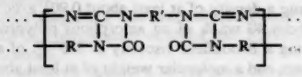
wherein

R represents an alkylene, cycloalkylene, aralkylene or arylene group,

A represents hydrogen or a blocked isocyanate group having dissociation temperatures of above 130° C., and

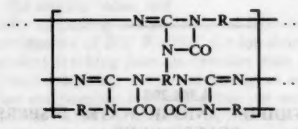
x represents an integer from 2 to 20,

and/or polyuretone imines, which are obtained by reacting the polycarbodiimides of formula (1) with (cyclo)aliphatic, araliphatic or aromatic di- and/or triisocyanates thereby linking the polycarbodiimide molecules according to the general formulae (2) and (3):



(2)

or



(3)

wherein R′ represents a bi- or trifunctional organic radical whereby the total of components (a) and (b) amounts to 100% by weight.

4,366,289

ACRYLATE-GRAFTED ELASTOMERS AS POLYMER MODIFIERS

Henno Keskkula; Donald A. Maass, and Kathleen M. McCreedy, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Apr. 20, 1981, Ser. No. 255,603

Int. Cl.³ C08L *57/00, 33/02*

U.S. Cl. 525—78 **14 Claims**

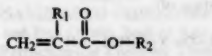
1. A compatibilized polyblend composition that is comprised, in intimate physical admixture of:

as the essential and compatibilization-facilitating component (A) of the polyblend:

between about 10 and about 60 percent by weight taken on total weight of polyblend, in the involved composition of a grafted rubber concentrate of an interpolymerized acrylate monomer that is an interpolymerization product in graft- or block-copolymer form of:

(i) between about 60 and about 90 percent by weight of the interpolymerizate of a natural or synthetic rubber elastomer; and

(ii) between about 10 and about 40% by weight of an interpolymerizate containing in grafted and/or block-interconnected polymer form a polymerized monomer of the formula:



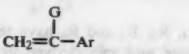
(I)

wherein each R_1 and R_2 is independently selected from the group consisting of hydrogen and lower alkyl units containing not more than about 4 carbon atoms; with

said component (A) interpolymerizate being characterized in containing in its matrix not more than about 20% by weight of free, unattached homopolymer or copolymer product(s) of Formula (I) monomer(s) which are not directly or indirectly chemically bonded to the elastomer in said interpolymerizate;

as the compatibilized component (B) polymerizate ingredient of the polyblend:

between about 90 and about 60 weight percent of a hydrocarbonaceous or halohydrocarbonaceous polymerizate containing polymerized therein at least about 50 percent by weight of at least one monomer of the formula:



(II)

wherein G is selected from the group consisting of hydrogen and methyl and Ar is an aromatic radical including various alkyl- and halo-ring-substituted aromatic units containing from 6 to about 10 carbon atoms, with

any balance of said component (B) polymerizate being an other than formula (II) hydrocarbonaceous or halohydrocarbonaceous monomer that is polymerizable with styrene and/or an elastomer that is interpolymerizable with styrene; plus

as an optional component (C) polymeric ingredient of the polyblend:

from 0 to about 60 weight percent with the limitation that the selected proportion of component (C) added to components (A) and (B) must equal 100 weight percent in composition of all components of another polymeric ingredient different from said component (A) and said component (B) that is mixable with component (B) materials but whose physical blending therewith results in a composite admixture exhibiting attendant physical properties that are generally inferior in comparison to those intrinsically coincident with those of either said component (B) or said component (C).

4,366,290

UNSATURATED POLYESTER RESIN COMPOSITION

Norihisa Ujikawa, Aichi, and Masaharu Nakayama, Nagoya, both of Japan, assignors to Nippon Oil and Fats Co., Ltd., Tokyo, Japan

Filed Jul. 13, 1981, Ser. No. 282,884

Claims priority, application Japan, Jul. 17, 1980, 55-97893

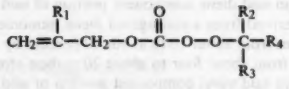
Int. Cl.³ C08L *67/06*

U.S. Cl. 525—169 **5 Claims**

1. An unsaturated polyester composition comprising:

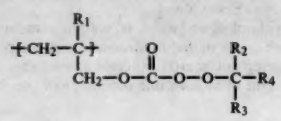
(a) 100 parts by weight of an α,β-ethylenically unsaturated polyester;

(b) from 3 to 30 parts by weight of a random copolymer prepared by radical copolymerization, at a polymerization temperature of from 0° to 110° C., in the presence of a radical polymerization initiator, of (1) an unsaturated peroxycarbonate having the formula



wherein R_1 is hydrogen or C_{1-4} alkyl, R_2 and R_3 each is a C_{1-4} alkyl, and R_4 is a C_{1-12} alkyl or C_{3-12} cycloalkyl, with (2) one or a mixture of two or more ethylenically unsaturated monomers selected from the group consisting of vinyl acetate, vinyl chloride, ethylene, allylacetate, allylchloroacetate, vinyl chloroacetate, butyl 3-butoxyacrylate, allylalcohol, 1,2-dichloroethylene, dibutyl maleate, diethyl maleate, isopropyl maleate, dimethyl maleate and methyl maleate, said ethylenically unsaturated monomers having Alfred-Price Q values of not more than 0.2, said random copolymer having a mean molecular weight of from 1×10^4 to 3×10^5 and containing from 0.5 to 20% by

weight of peroxycarbonate groups, said random copolymer having units of the formula



wherein R_1, R_2, R_3 and R_4 have the same meanings as defined above, and units derived from said ethylenically unsaturated monomer or monomers; and

(c) from 27 to 190 parts by weight or one or a mixture of two or more polymerizable monomers selected from the group consisting of styrene, vinyltoluene, chlorostyrenes, diallylphthalate, vinyl acetate, acrylic acid esters and methacrylic acid esters.

4,366,291

THERMALLY REVERSIBLE COPOLYMERS AND PROCESS FOR THE PREPARATION THEREOF

Binnur Gunesin, Uniontown; Gary R. Hamed, Akron; Jung W. Kang, Clinton, and Donald N. Schulz, Hartville, all of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 132,737, Mar. 24, 1980, Pat. No. 4,307,210. This application Sep. 18, 1981, Ser. No. 303,214

Int. Cl.³ C08L *33/24*

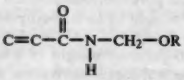
U.S. Cl. 525—218 5 Claims

1. A high green strength rubber comprising:

a styrene-butadiene rubber having a number average molecular weight of from about 5,000 to about 500,000; and

at least 50 percent by weight of a thermally reversible copolymer comprising:

a copolymer of an N-(alkoxymethyl)acrylamide, a conjugated diene component and a vinyl component, said copolymer being cross-linked by a metal ion, wherein said N-(alkoxymethyl)acrylamide portion of said copolymer comprises from about 0.5 to about 11 percent by weight and has the formula



where R is selected from the group consisting of straight and branched alkyl chains having from 1 to about 20 carbon atoms;

wherein said diene component portion of said copolymer is derived from a conjugated diene monomer and comprises from about 10 to about 90 percent by weight and has from about four to about 20 carbon atoms;

wherein said vinyl component portion of said copolymer comprises from about 0 to about 90 percent by weight and is selected from the group consisting of monovinyl aromatic compounds having from eight to about 20 carbon atoms and acrylic compounds having from three to about five carbon atoms

with the proviso that the total amount of said N-(alkoxymethyl)acrylamide, diene and vinyl components equals 100; and

wherein said metal is selected from the group of all di-, tri- and polyvalent metals and is present in said copolymer in an amount of at least one equivalent mole to two equivalent moles of said N-(alkoxymethyl)acrylamide.

4,366,292

MIXED POLYOLEFINIC COMPOSITIONS

Raymond J. Werner, 171 Woodcliff Ave., Woodcliff Lake, N.J. 07675; William J. Jennings, 263 Bayridge Pkwy., Brooklyn, N.Y. 11209; Daniel L. Crowley, 97 Continental Ave., Forest Hills Gardens, N.Y. 11375, and Frank J. Smith, 38 Sargent Rd., Scarsdale, N.Y. 10583

Continuation of Ser. No. 119,428, Feb. 7, 1980, abandoned, which is a continuation-in-part of Ser. No. 680,384, Apr. 26, 1976, abandoned. This application Jan. 29, 1981, Ser. No. 229,559

Int. Cl.³ C08L *23/06, 23/12, 23/16*

U.S. Cl. 525—240 4 Claims

1. A polyolefinic composition having a non-tacky surface which consists of a homogenous blend of:

(a) at least 50 wt.% polyethylene resin;

(b) about 3 to about 20 wt.% of an isotactic polypropylene resin having a density of at least about 0.903 g/cc^3; and

(c) 10 to about 40 wt.% of an amorphous polypropylene resin having a Brookfield viscosity at 375° F. of at least about 10 cps and a molecular weight of at least about 200 as measured by GPC.

4,366,293

ACRYLIC MODIFIED ANIONIC WATER DISPERSIBLE POLYSTYRENE

Michael A. Tobias, Bridgewater, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jun. 17, 1981, Ser. No. 274,589

Int. Cl.³ C08L *51/00*

U.S. Cl. 525—301 4 Claims

1. A graft copolymer of an acrylic monomer or monomers or of acrylic monomer of monomers and other monomers copolymerizable therewith and a polystyrene in which at least about 8 percent of the total weight of said graft copolymer is derived from acrylic acid, methacrylic acid, or both.

4,366,294

WATER SWELLABLE COMPOSITIONS

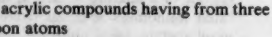
Earl P. Williams, Pen Argyl, Pa., and Donald H. Lorenz, Basking Ridge, N.J., assignors to GAF Corporation, New York, N.Y.

Filed Jun. 29, 1981, Ser. No. 278,277

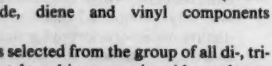
Int. Cl.³ C08L *37/00*

U.S. Cl. 525—327.6 11 Claims

1. A water swellable composition consisting essentially of reaction product of monobasic amine and crosslinked interpolymer consisting essentially of substantially equimolar quantities of maleic anhydride and a monovinyl alkyl ether wherein the alkyl group contains from 1 to 4 carbon atoms and from about 1 to about 5 mole percent, based on the monovinyl alkyl ether, of a crosslinking agent having a formula selected from the class consisting of:



and



where X_1 represents an alkylene group of two to twelve carbon atoms and X_2 represents an alkylene group of two to four carbon atoms and n represents an integer of 2 to 100.

4,366,295

STABLE PRECATALYZED EPOXY RESIN COMPOSITIONS

Manuel C. Tyler, Jr., Angleton, and Avis L. McCrary, Lake Jackson, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jun. 1, 1981, Ser. No. 269,223

Int. Cl.³ C08G 59/68

U.S. Cl. 525—482 **9 Claims**

1. In a precatalyzed epoxy resin composition containing a mixture of (A) a relatively low equivalent weight epoxy resin having an average of more than one glycidyl ether group per molecule and (B) a phosphonium compound as a catalyst for the reaction between said epoxy resin and a phenolic-hydroxyl containing compound which is subsequently blended with said precatalyzed epoxy resin composition; the improvement which provides a stable precatalyzed epoxy resin composition as evidenced by,

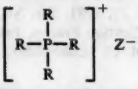
(1) after subjecting said precatalyzed epoxy resin composition to a temperature of about 200° F. (93.3° C.) for about 48 hours;

(a) not more than 50% of the phosphonium groups originally present in said mixture are deactivated;

(b) the viscosity has not increased by more than 30% of the original value; and

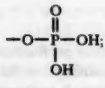
(2) after subjecting said precatalyzed resin composition to a temperature of 200° F. (93.3° C.) for about 63 hours, the product resulting from its reaction with a phenolic hydroxyl-containing compound having an average of more than one phenolic hydroxyl group per molecule has a % epoxide value not greater than the value obtained by dividing the theoretical % epoxide value by 0.9;

by employing as the catalyst, a phosphonium salt of phosphoric acid, phosphorous acid, polyphosphoric acid or mixture thereof, which salts are represented by the formula



wherein each R is independently a hydrocarbyl group having from 1 to about 20 carbon atoms or the group R^1Y

wherein R^1 is a aliphatic hydrocarbon group having from 1 to about 20 carbon atoms and Y is Cl, Br, I, NO_2 or OH and Z is a phosphate group having the formula



a phosphite group having the formula

a polyphosphate group or mixture thereof.

4,366,296

UNSATURATED COPOLYMERS

Sadao Kitagawa, and Isao Okada, both of Ami, Japan, assignors to Mitsubishi Petrochemical Company Limited, Japan

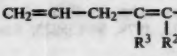
Continuation of Ser. No. 157,054, Jun. 6, 1980, abandoned. This application Jan. 15, 1982, Ser. No. 339,462

Claims priority, application Japan, Jun. 12, 1979, 54-73808; Aug. 21, 1979, 54-106494; Aug. 21, 1979, 54-106495

Int. Cl.³ C08F 2/38, 210/06, 210/08, 210/18

U.S. Cl. 526—77 **14 Claims**

1. A thermoplastic, substantially resinous, unsaturated copolymer which is a random copolymer of an α-olefin selected from one member of the group consisting of ethylene, propylene, and 4-methyl-1-pentene with a branched 1,4-diene of the formula

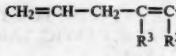


wherein R^1 is an alkyl group of at the most 8 carbon atoms, and each of R^2 and R^3 is hydrogen or an alkyl group of at the most 8 carbon atoms, the case where R^2 and R^3 are both hydrogen being excluded, said copolymer having a content of said branched 1,4-diene of 0.01 to 20 mol percent, an initial modulus of elasticity of 500 to 100,000 kg.f./cm.^{2} and a melt index of at the most 500 grams/10 minutes.

6. A process for producing a thermoplastic, substantially resinous, unsaturated copolymer which is a random copolymer of an α-olefin selected from one member of the group consisting of ethylene, propylene, and 4-methyl-1-pentene with a branched 1,4-diene, said process comprising

causing a mixture consisting essentially of said α-olefin and said branched 1,4-diene to contact a Ziegler-Natta catalyst whose transition metal component is a solid halogen-containing titanium compound or a solid composition thereof in the presence of hydrogen in a quantity such that the ratio of the partial pressure of hydrogen to the partial pressure of said α-olefin is a minimum of 0.01,

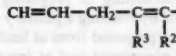
said branched 1,4-diene having the formula



wherein R^1 is an alkyl group of at the most 8 carbon atoms, and each of R^2 and R^3 is hydrogen or an alkyl group of at the most 8 carbon atoms, the case where R^2 and R^3 are both hydrogen being excluded, said copolymer having a content of said branched 1,4-diene of 0.01 to 30 mol percent and a melt index of at the most 500 grams/10 minutes,

thereby producing a thermoplastic, substantially resinous, unsaturated copolymer having an initial modulus of elasticity of 500 to 100,000 kg. f./cm.^{2}.

9. A thermoplastic, substantially resinous, unsaturated copolymer which is a substantially random copolymer of propylene and a branched 1,4-diene of the formula



wherein R^1 is an alkyl group of at the most 8 carbon atoms, and each of R^2 and R^3 is hydrogen or an alkyl group of at the most 8 carbon atoms, the case where R^2 and R^3 are both hydrogen being excluded, wherein prior to copolymerization, propylene is caused to undergo homopolymerization in a quantity of about 0.25 to 3 percent by weight of the total polymer and said copolymer has a content of said branched 1,4-diene of about 0.01 to 20 mol. percent, an initial modulus of elasticity of 500 to 100,000 kg./f./cm.^{2} and a melt index of at the most 500 grams/10 minutes.

4,366,297

PROCESS FOR PRODUCING OLEFINIC COPOLYMER RUBBER WITH IMPROVED TITANIUM COMPOUND CONTAINING CATALYST SYSTEM

Kenya Makino, Kuwana; Hideo Sakurai; Masaru Watanabe, both of Yokkaichi, and Toshiyuki Nishimura, Kameyama, all of Japan, assignors to Japan EP Rubber Co., Ltd., Mie, Japan

Filed Oct. 23, 1980, Ser. No. 200,066

Claims priority, application Japan, Oct. 23, 1979, 54-135933; Oct. 23, 1979, 54-135934; Oct. 23, 1979, 54-135935; Apr. 24, 1980, 55-53556

Int. Cl.³ C08F *4/64*

U.S. Cl. 526—119 13 Claims

1. In a process for producing a rubbery olefin copolymer which comprises random copolymerization of at least two olefins in the presence of a catalyst composed of (A) a titanium compound and (B) an organometallic compound of a metal of Groups I to III of the periodic table, the improvement wherein the titanium compound (A) is a liquid product obtained by treating a titanium tetrahalide of the general formula TiX_4 in which X represents Cl, Br or I in a hydrocarbon, a halogenated hydrocarbon or a mixture of both in the presence of an ether with at least one member selected from the group consisting of (1) an organoaluminum compound, (2) an organomagnesium compound and (3) hydrogen with at least one metal or metal compound, said metal selected from the group consisting of metals of Group IB, IIB, IVB and VIII of the Periodic Table, said ether being represented by the general formula:

$$R^1O\,R^2$$

wherein R^1 and R^2, independently form each other, represent an alkyl, alkenyl or aralkyl group having 2–12 carbon atoms with the proviso the alkyl, alkenyl or aralkyl group contains at least 6 carbon atoms if a hydrocarbon is used.

4,366,298

PROCESS AND HEAVY METAL CATALYST FOR THE POLYMERIZATION OF α-OLEFINS, PARTICULARLY POLYETHYLENE

Dieter Kurz, Burghausen, Fed. Rep. of Germany, assignor to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Jun. 19, 1980, Ser. No. 161,204

Claims priority, application Fed. Rep. of Germany, Jul. 5, 1979, 2927221; Jul. 31, 1979, 2931045; Apr. 22, 1980, 3015376

Int. Cl.³ C08F *4/02, 10/00*

U.S. Cl. 526—125 12 Claims

1. An improvement in the process for the polymerization of an at least one α-olefin comprising reacting said α-olefin under elevated temperatures and pressures in the presence of a solid polymerization catalyst consisting essentially of a solid compound containing (1) element(s) of the IV and/or V subgroup(s) of the Mendeleev Periodic Table, (2) magnesium, (3) halogen, (4) oxygen, and possibly (5) element(s) of the II and/or III main group(s) of the Mendeleev Periodic Table, which solid compound is activated with at least one organometallic compound where said metal is from the II and/or III main group(s) of the Mendeleev Periodic Table, and recovering a polymerizate, the improvement consisting of preparing said solid compound prior to activation, by reacting a primary solid containing magnesium and halogen prepared from at least one hydrocarbon-soluble magnesium compound and at least one halogen compound selected from the group consisting of a chloroalkane having from 1 to 6 carbon atoms of which at least one carbon atom has at least two directly bonded chlorine atoms, a carbon chloride compound having from 1 to 6 carbon atoms, and mixtures thereof, in two successive and separate reacting stages A and B, in either order,

where a solid based on magnesium compound(s) is reacted in reaction stage A in suspension in at least one liquid hydrocarbon with

(i) an alcohol selected from the group consisting of tert.-butanol, isopropanol and mixtures thereof, and

(ii) at least one halogen-containing titanium compound of the formula:

$$X_aTi(OR^6)_{4-a}$$

wherein X represents halogen, R^6 is a substituent selected from the group consisting of alkyl having from 1 to 8 carbon atoms and hydrocarbon aryl having from 6 to 8 carbon atoms, and a is 2, 3 or 4,

and, in reaction stage B, a solid based on magnesium compound(s) in suspension in at least one liquid hydrocarbon is reacted with

(i) at least one halogen-containing metal titanium compound of the formula:

$$X'_bTi(OR^7)_{4-b}$$

wherein X' represents halogen, R^7 represents a substituent selected from the group consisting of alkyl having from 1 to 8 carbon atoms and hydrocarbon aryl having from 6 to 8 carbon atoms, and b is 2, 3, or 4, and

(ii) at least one organoaluminum compound,

whereby a polymerizate is recovered having a broad molecular-weight distribution.

4,366,299

COPOLYMERS CONTAINING FLUORINE AND THEIR USE FOR THE WATER-REPELLENT AND OIL-REPELLENT TREATMENT OF VARIOUS SUBSTRATES

Andre L. Dessaint, Clermont, France, assignor to P C U K Produits Chimiques Ugine Kuhlmann, Courbevoie, France

Filed Jan. 27, 1981, Ser. No. 228,826

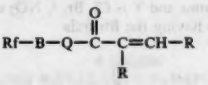
Claims priority, application France, Feb. 19, 1980, 80 03566

Int. Cl.³ C08F *220/22*

U.S. Cl. 526—243 9 Claims

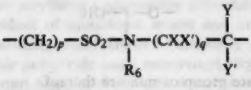
1. A fluorinated copolymer which comprises:

(a) 35 to 98% by weight of one or more polyfluorinated monomers of the formula:



(I)

in which Rf represents perfluoroalkyl with a straight or branched chain containing 2 to 20 carbon atoms, Q represents oxygen or sulfur, B represents a bivalent chain selected from:



$-(CH_2)_p-$,

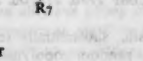
$-(CH_2)_p-O-(CH_2)_r-$,

$-(CH_2)_p-S-(CH_2)_r-$,

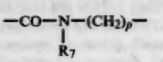
$-(CH_2)_p-(OCH_2CH_2)_r-$,

$-(CH_2)_p-SO_2-(CH_2)_r-$,

$-CH=CH-(CH_2)_p-$,

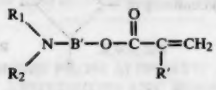


$-COO-(CH_2)_p-$ or



in which p is a whole number from 1 to 20, q is a whole number from 1 to 4, r is a whole number from 1 to 20, R_6 is hydrogen, alkyl containing 1 to 10 carbon atoms, cycloalkyl containing 5 to 12 carbon atoms, hydroxyalkyl containing 2 to 4 carbon atoms, aryl or aryl substituted by alkyl containing 1 to 6 carbon atoms, R_7 is hydrogen or alkyl containing 1 to 4 carbon atoms, X, X', Y and Y' are the same or different and each represents hydrogen or alkyl containing 1 to 4 carbon atoms, one of the symbols R represents hydrogen and the other hydrogen or alkyl containing 1 to 4 carbon atoms;

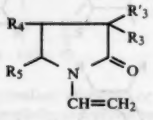
(b) 1 to 15% by weight of one or more monomers of the formula:



(II)

in which B' represents linear or branched alkylene containing 1 to 4 carbon atoms, R' represents hydrogen or alkyl containing 1 to 4 carbon atoms, R_1 represents alkyl containing 1 to 18 carbon atoms, hydroxyethyl or benzyl, R_2 represents hydrogen or alkyl containing 1 to 18 carbon atoms, hydroxyethyl or benzyl or R_1 and R_2 together with the nitrogen form morpholino, piperidino or pyrrolidinyl-1;

(c) 1 to 50% by weight of one or more pyrrolidone monomers of the formula:



(III)

in which R_3, R'_3, R_4 and R_5 are the same or different and each represents hydrogen or alkyl containing 1 to 4 carbon atoms; and

(d) up to 10% by weight of a monomer other than the monomers of formulae (I), (II) and (III), which is copolymerizable with said monomers of formulae (I), (II) and (III), and, optionally, its salt form obtained by salifying with an acid having a dissociation constant or first dissociation constant greater than 10^{-5}, or its form obtained by quaternizing by means of a quaternizing agent.

4,366,300

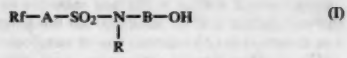
COMPOSITION AND PROCESS FOR THE PROTECTION OF MATERIALS AGAINST SPOTS OR STAINS

Charles L. L. Delescluse, Apremont, France, assignor to PCUK - Produits Chimiques Ugine Kuhlmann, Courbevoie, France

Filed May 21, 1981, Ser. No. 265,941
Claims priority, application France, Jun. 3, 1980, 80 12259
Int. Cl.³ C09D *3/81, 5/14*
U.S. Cl. 526—245 **20 Claims**

1. A substantially non-aqueous liquid composition for the protection of materials against comtaminations from spots and stains, which consists by weight of:

(A) 0.1 to 1% of at least one fluorinated resin based on an acrylic or methacrylic ester of a fluorinated sulfonamide-alcohol and containing from 0 to 80% non-fluorinated monomers, said fluorinated sulfonamide-alcohol having the formula:



(I)

in which Rf represents a perfluoroalkyl radical, A represents a direct bond or an alkylene bridge, B represents an alkylene bridge and R represents a hydrogen atom or an alkyl, cycloalkyl, hydroxyalkyl or aryl radical;

(B) 0.4 to 10% of at least one adjuvant selected from aminoplast resins based on melamine, polyvinyl resins, epoxy resins, polyester resins, styrene resins, alkyd-urethane resins, phenolic resins and waxes; and

(C) 89 to 99.5% of at least one organic solvent.

4,366,301

CROSSLINKABLE THERMOPLASTIC POLYURETHANE RESINS CONTAINING ETHYLENIC SIDE GROUPS

Patrice M. Le Roy, Ballancourt, and Jacky P. Pattein, Etrechy, both of France, assignors to Societe Nationale des Poudres et Explosifs, Paris, France

Filed Apr. 30, 1981, Ser. No. 258,890
Claims priority, application France, May 14, 1980, 80 10807
Int. Cl.³ C08G *18/32*
U.S. Cl. 528—66 **10 Claims**

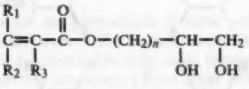
1. Crosslinkable thermoplastic polyurethane resin containing ethylenic side groups, which is the product of the reaction of:

(a) an organic diisocyanate,

(b) a long-chain saturated linear diol having a molecular weight of between 450 and 4,000,

(c) an aliphatic, cycloaliphatic or aromatic compound having a molecular weight of less than 300, which contains 2 to 20 carbon atoms and possesses two groups having at least one hydrogen atom which is active towards the NCO groups, and

(d) an unsaturated diol consisting of the acrylic or methacrylic acid ester of a trihydric alcohol, of the formula:



in which R_1 and R_2, which are identical or different, are hydrogen, a lower alkyl group, an aryl group or a halogen, R_3 is hydrogen, a lower alkyl, aryl or cycloalkyl group or a halogen and n is 1, 2, 3 or 4 the diisocyanate compound (a) being present in a ratio NCO: group having at least one H which is active towards the NCO groups, which is less than or equal to 1.1, the molar ratio diol (b): compounds (c)+(d) being between 0 and 10 and the molar ratio compound (c): unsaturated diol (d) being between 0 and 10 if b≠0 and between 1 and 10 if b=0.

4,366,302

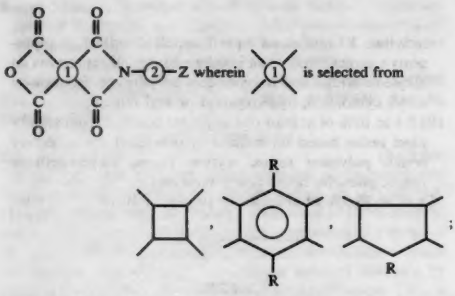
IMIDE-ANHYDRIDES AND EPOXY RESIN SYSTEMS CONTAINING SUCH COMPOUNDS

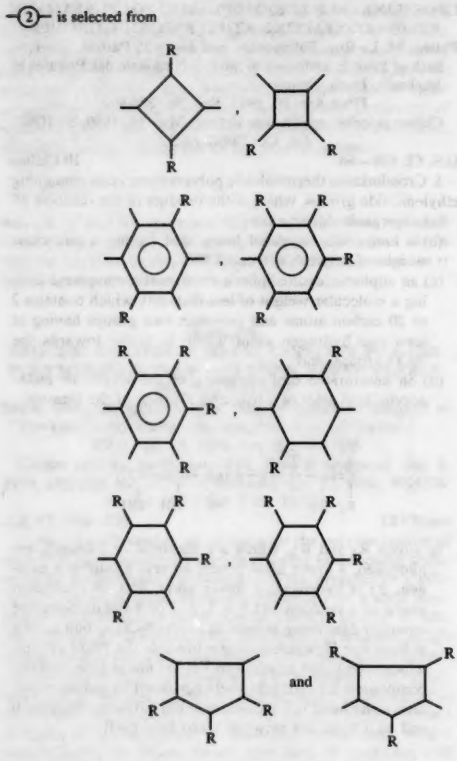
Raj N. Gounder, Robbinsville, N.J., and John T. Geary, Erie, Pa., assignors to Lord Corporation, Erie, Pa.

Filed Jun. 15, 1981, Ser. No. 273,808
Int. Cl.³ C08G *59/42, 59/44*
U.S. Cl. 528—99 **10 Claims**

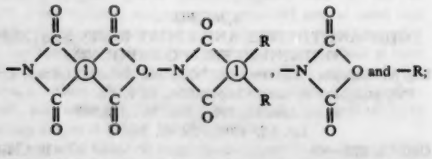
1. A room temperature-stable two-pack epoxy resin system consisting essentially of

(a) a first pack comprising at least one imide-anhydride having the structure

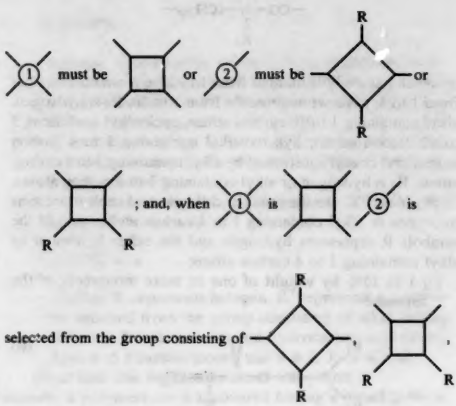


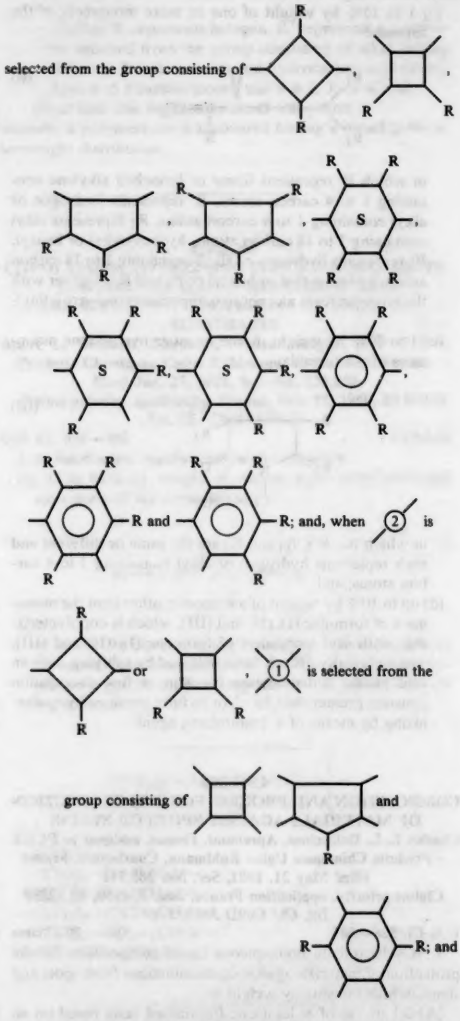


Z is selected from



wherein R is selected from the group consisting of hydrogen, halogen, alkyl group having from 1 to 4 carbon atoms, hydroxyl, carboxyl and amine; with the proviso that, in all cases, either





(b) a second pack comprising an epoxy resin substantially free of active hydrogen having a 1,2 epoxy equivalent value of greater than 1 and capable of solubilizing said imide anhydride.

4,366,303
PARTICULATE RESOLES WITH IMPROVED CURE RATE AND SINTER RESISTANCE

Peter W. Kopf, Hillsborough Township, Somerset County, N.J., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Dec. 11, 1981, Ser. No. 329,871
Int. Cl.³ C08G *8/28, 14/06, 14/12*
U.S. Cl. 528—129 **6 Claims**

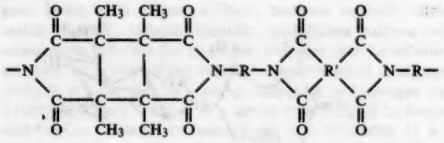
1. A process for producing a particulate, resole resin comprising the steps of: (a) reacting (1) formaldehyde, (2) a phenol, and (3) an effective amount of hexamethylenetetramine or a compound containing amino hydrogen, or mixtures thereof; in an aqueous medium containing an effective amount of a protective colloid, for a period of time sufficient to produce a particulate, resole resin dispersed in the aqueous medium; (b) cooling the reactive mixture to below about 40° C.; (c) reacting the cooled reaction mixture with an alkaline compound for a period of time sufficient to produce a treated resin exhibiting increased cure rates and increased sinter resistance; and (d) recovering the resin from the aqueous dispersion.

4,366,304
COPOLYIMIDES FROM ALIPHATIC AND AROMATIC ANHYDRIDES AND DIAMINES

Tayseer S. Nimry, Wheaton, and Ellis K. Fields, River Forest, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Jul. 24, 1981, Ser. No. 286,697
Int. Cl.³ C08G *73/10*
U.S. Cl. 528—189 **84 Claims**

1. A copolyimide of the following recurring structure:



wherein R is a divalent aliphatic or aromatic hydrocarbon radical or an aromatic hydrocarbon radical containing 6 to 10 carbon atoms joined directly or by a stable linkage selected from the group consisting of —O—, methylene,

—SO—, —SO_2— and —S— radicals and R′ a tetravalent aliphatic or aromatic radical.

4,366,305
PROCESS FOR HEAT STABILIZING OXYMETHYLENE COPOLYMERS

Akira Amemiya; Tadashi Kunii; Tomotaka Furusawa; Mutsuhiko Takeda; Katsumasa Tanaka; Toshikazu Umemura; Yoshihiro Ono; Isamu Masumoto; Noriyasu Nakao, and Masanori Furukawa, all of Yokkaichi, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Nov. 17, 1981, Ser. No. 322,249
Claims priority, application Japan, Nov. 20, 1980, 55-163686
Int. Cl.³ C08G *2/28*
U.S. Cl. 528—230 **5 Claims**

1. In a process for producing a stabilized oxymethylene copolymer by heat-melting, at a temperature ranging between the melting point of the copolymer and a temperature 100° C. higher than the melting point in a degassing apparatus in the presence of a heat stabilizer, a crude oxymethylene copolymer of trioxane with a cyclic acetal or cyclic ether, to decompose and eliminate the instable portions of the copolymer, the improvement which comprises using as the degassing apparatus in heat stabilizing the crude oxymethylene copolymer a combination of (A) an extruder and (B) a surface renewing-type mixer, and carrying out the operation by first feeding a crude oxymethylene copolymer to said extruder (A) to heat-melt and decompose 30–90% by weight of the instable portions of the crude copolymer, removing the decomposed gas via a vent provided in said extruder, and thereafter introducing the molten resin continuously to said surface renewing-type mixer (B) where substantially all of the remaining instable portions of the oxymethylene copolymer are heat-decomposed until the content of the instable portions falls below about 2 wt.%, thereby heat stabilizing the copolymer; said extruder (A) having a single or a plurality of shafts, said surface renewing-type mixer (B) comprising a casing having a jacket for a heating medium fitted about its periphery and, disposed inside said casing, at least two stirring shafts each fitted with a plurality of scraping blades, said scraping blades being fitted to the shafts in staggered relationship to ensure that the blades do not collide with one another when the shafts are rotated in the same or different directions, whereby said blades rotate while maintaining a slight clearance between their tips and the inside surface of the casing and the surface of the other stirring shaft, or said scraping blades being fitted to the several shafts being so disposed as to be in the same plane right-angled to the axial direction and so that they rotate while maintaining a slight clearance between the tips of the blades and the inside surface of the casing and the surface of the other corresponding blade when said shafts are rotated in the same or different directions, whereby said surface renewing-type mixer functions to mix and knead the resin thereby constantly renewing the surface of the resin to volatize the volatiles contained therein.

4,366,306
MELT POLYMERIZATION OF ε-CAPROLACTAM

Harry A. Smith, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 117,734, Feb. 1, 1980, abandoned, which is a continuation-in-part of Ser. No. 17,530, Mar. 5, 1979, abandoned. This application Oct. 29, 1980, Ser. No. 202,022
Int. Cl.³ C08G *69/16*
U.S. Cl. 528—315 **7 Claims**

1. A process for the preparation of linear polyamide from ε-caprolactam, the steps of the method comprising heating an initially present polymerizable polyamide forming ε-caprolactam composition to a temperature from about 180° to 300° C. in the presence of about 0.5 to 10 mole of water per mole of initially present composition, to convert at least a major portion of the composition to polymer while under superatmospheric pressure, removing water from a polymer at a pressure not greater than about atmospheric pressure, maintaining the polymer under an inert atmosphere and subsequently cooling the polymer to provide solidified polymer having polymerized therein ε-caprolactam, the improvement which comprises providing in the polymerizing composition before a majority of the polymerization has occurred from about 0.01 to less than about 0.6 mole percent based on the initially present composition of primary and secondary amines or mixtures thereof which boil under atmospheric pressure at temperatures not less than about 245° C. of the Formula (I):

(I)

where R_1 and R_2 are individually selected from the group consisting of hydrogen, alkyl radicals, cycloalkyl radicals, cyclooxyamidoalkyl radicals, amidoalkyl radicals, aromatic radicals, aralkyl radicals, alkyl sulfonate radicals, alkyl sulfide, alkaryl radicals, such radicals containing up to 18 carbon atoms, where R_1 and R_2 together are collectively considered,

R_1 and R_2 together represent a divalent alkylene radical and after removing water, maintaining the polymer at a temperature of from 240° to 280° Centigrade for a period of from about 6 to 12 hours while contacting the polymer with an inert gas at a rate of from about 5 to 300 cubic centimeters per minute of a gas at standard temperature and pressure per 300 grams of polymer to thereby obtain a polyamide containing less than about 3 weight percent methanol extractable.

4,366,307

LIQUID POLYTHIOETHERS

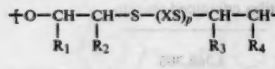
Hakam Singh, Arcadia; Jack W. Hutt, Tarzana, and Morris E. Williams, Van Nuys, all of Calif., assignors to Products Research & Chemical Corp., Glendale, Calif.

Continuation-in-part of Ser. No. 213,173, Dec. 4, 1980, abandoned, and Ser. No. 231,319, Feb. 4, 1981, abandoned. This application Mar. 30, 1981, Ser. No. 248,994

Int. Cl.³ C08G *75/00*

U.S. Cl. 528—373 101 Claims

1. A non-crystallizing, water, solvent, and fuel resistant liquid polythioether having two to four terminating radicals which do not substantially reduce the water, solvent, and fuel resistance and a water, solvent, and fuel resistant polymeric backbone having repeating units of the formula:



wherein each of R_1, R_2, R_3 and R_4 is hydrogen or lower alkyl providing that a sufficient number of R_1, R_2, R_3 and/or R_4 are lower alkyl in said polymeric backbone to render said backbone non-crystallizing; X is a divalent organic radical selected from $-CH_2-CH_2-$, $-CH_2-CH_2-CH_2-CH_2-$, $-CH_2-CH_2-S-CH_2-CH_2-$ or $-CH_2-CH_2-O-CH_2-CH_2-$; n is 8 to 200; and p is 0 or 1.

4,366,308

PROCESS FOR THE PRODUCTION OF POLYSACCHARIDE RBS SUBSTANCE

Eichi Soma; Kohei Kobayashi; Takuro Karakawa; Shigeyoshi Kato, all of Tokyo, and Kiichi Uchida, Fujisawa, all of Japan, assignors to Sapporo Breweries Limited, Tokyo; Etsuo Ito, Urasoe and Daicel Chemical Industries, Ltd., Sakai, all of, Japan

Filed Aug. 1, 1980, Ser. No. 174,537

Claims priority, application Japan, Aug. 13, 1979, 54/102216

Int. Cl.³ C08B *11/22, 37/00;* C13K *1/08*

U.S. Cl. 536—128 4 Claims

1. A process for producing polysaccharide RBS substance from rice bran, said substance having the properties of being insoluble in alcohol, acetone, hexane, benzene, ethyl acetate, dimethylsulfoxide, ligroin, carbon tetrachloride, chloroform and ether, and soluble or highly suluble in water; neutral or slightly acidic (1% aqueous solution or suspension); positive in the Molisch reaction, anthrone-sulfuric acid reaction, tryptophane-sulfuric acid reaction, crystein-sulfuric acid reaction, chromotrope-sulfuric acid reaction, phenol-sulfuric acid reaction, carbazole-sulfuric acid reaction, biuret reaction, ninhydrin reaction and Lowry-Folin reaction and negative in the Elson-Morgan reaction and starch-iodine reaction; it has the ultraviolet absorption spectrum shown in FIG. 2; and comprises glucose as a sugar component and has an α-1, 6-glucoside bond as a main chain with branched structure, which comprises contacting a rice bran with hot water to extract said polysaccharide RBS substance into the water, adding a polar organic solvent or a salting-out agent to the water containing the extracted substance to form precipitates containing said polysaccharide RBS substance, and separating and collecting said precipitates, said precipitates having the characteristic that they will not pass through a semi-permeable membrane.

4,366,309

DERIVATIVES OF ANTIBIOTIC AR-5 COMPONENTS

Ashit K. Ganguly, Upper Montclair; Yi-Tsung Liu, Parsippany; Olga Sarre, Verona; Robert Jaret, Livingston, and Doris P. Schumacher, Florham Park, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

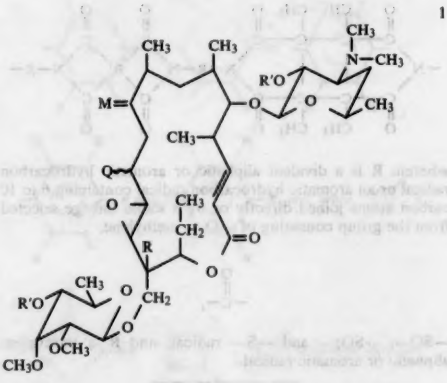
Continuation-in-part of Ser. No. 130,330, Mar. 14, 1980, abandoned. This application Apr. 13, 1981, Ser. No. 253,138

Int. Cl.³ C07H *17/08*

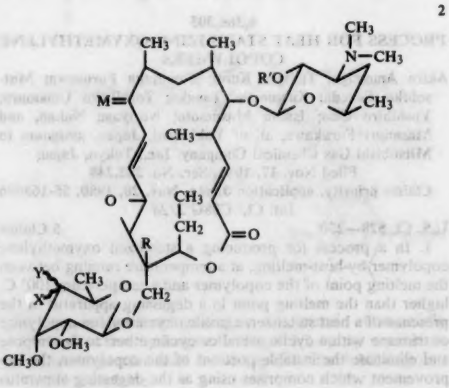
U.S. Cl. 536—7.1 50 Claims

1. Compounds of the formulae:

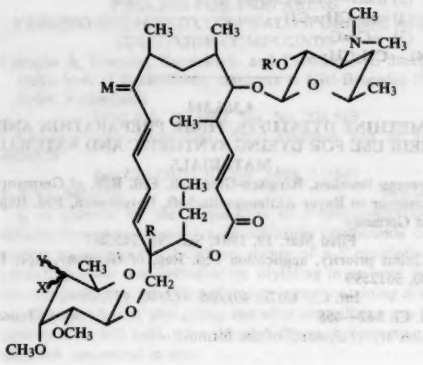
1



2



-continued



and the pharmaceutically acceptable salts thereof and esters thereof of acids selected from the group consisting of acetic, propionic, oxalic, valeric, oleic, palmitic, stearic, lauric, benzoic, lactic, para toluene sulfonic, methane sulfonic, citric, maleic, fumaric, tartaric, succinic, naphthalene sulfonic and adamantoic, wherein the wavy line indicates that the substituent may be in any of the possible stereochemical configurations; R is a member of a group consisting of hydrogen and hydroxyl; R′ is a member of a group consisting of hydrogen and C_2–C_{18} alkanoyl, carbamoyl and thiocarbamoyl; M is a member of the group consisting of oxygen and H_2OR'; Q is a member of the group consisting of —NZ and —SZ′ wherein —NZ is a member of the group consisting of amino, acylamino wherein the acyl group is an amionacid residue, C_1–C_{18} akylamino, C_2–C_{36} dialkylamino, hydroxy (C_1-C_{18})alkylamino, C_1–C_{18} alkylimino, or C_7–C_{18} aralkylimino, aminothiocarbonylamino(C_1–C_{18})alkyl, amidinyl, C_1–C_{18} alkylcarboxyamino, ureido, 4-ethyl-2,3-dioxopiperazinocarbonylamino, guanidino, C_1–C_{18}, alkylguanidino and an aminoacid residue; —SZ′ is a member of the group consisting of C_1–C_{18} alkylthio, thioxanthyl, including C_1–C_{18} alkyl, phenyl, phenyl substituted with a member of the group consisting of halogeno, trifluoromethyl, hydroxy and lower alkoxy, C_7–C_{18} aralkyl, thioxanthyl, C_1–C_{18} alkylamino(C_1–C_{18})alkylthio, phenylthio, halogenophenylthio, trifluoromethylphenylthio, hydroxyphenylthio, loweralkoxyphenylthio, C_2–C_{18} aralkylthio, heterocyclethio, heterocycle (C_1–C_{18}) alkylthio, heterocycle (C_7–C_{18}) aralkylthio, heterocyclephenylthio, heterocycle(halogeno) phenylthio, heterocycle(trifluoromethyl)phenylthio, heterocycle(hydroxy)phenylthio, heterocycle(loweralkoxy)phenylthio, (wherein the heterocycle contains at least one hetero atom selected from the group consisting of sulfur, nitrogen and oxygen), C_1–C_{18} alkylcarboxy(C_1–C_{18})alkylthio and sulfur containing amino acid residues, X is a member of the group consisting of hydrogen, OR′epi, mesyloxy, tosyloxy, trifluoromethanesulfonyloxy, halogeno, azido, amino, isocyanato, thiosiocyanato, C_1–C_{18} alkylimino, phenylimino, halogenophenylimino, trifluoromethylphenylimino, hydroxyphenylimino, loweralkoxyphenylimino, C_7–C_{18} aralkylimino, urethano, amidino, guanidino, C_1–C_{18} alkoxyamino, cyclicguanidino when Y is hydrogen; and Y in combination with X is oxygen.

4,366,310

CONTROLLED RELEASE COMPOSITIONS

Stewart T. Leslie, Aberdeen, Scotland, assignor to Euroceltique, S.A., Luxembourg

Filed Dec. 10, 1980, Ser. No. 214,625

Claims priority, application Ireland, Dec. 19, 1979, 2480/79; Dec. 19, 1979, 2481/79

Int. Cl.³ C08B *11/00*

U.S. Cl. 536—56 **11 Claims**

1. A molecular coordination complex of a cellulose polymer and a solid aliphatic alcohol selected from the group consisting of unsubstituted solid aliphatic alcohols of 8–18 carbon atoms and solid aliphatic alcohols of 8–18 carbon atoms substituted by an aliphatic group of 8–18 carbon atoms.

4,366,311

NOVEL DIANEMYCIN DERIVATIVE

Taku Mizutani, Ageo; Michio Yamagishi, Tokorozawa; Kazutoshi Mizoue, Urawa; Akira Kawashima, Tokyo; Sadafumi Omura, Ageo; Noboru Otake, Yokohama, and Haruo Seto, Hachioji, all of Japan, assignors to Taisho Pharmaceutical Co., Ltd., Tokyo, Japan

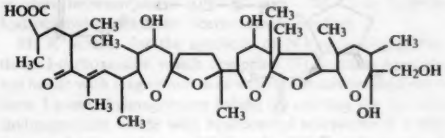
Filed Sep. 18, 1981, Ser. No. 303,497

Claims priority, application Japan, Sep. 27, 1980, 55-134814

Int. Cl.³ C07H *3/06*

U.S. Cl. 536—123 **1 Claim**

1. A compound of the formula



and the alkali metal, alkaline metal and ammonium salts thereof.

4,366,312

METAL COMPLEXES OF ISOINDOLINAZINES, PROCESS FOR THEIR PREPARATION AND USE

Abul Iqbal, Ettingen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

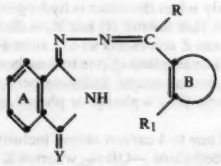
Filed Mar. 9, 1981, Ser. No. 242,004

Claims priority, application Switzerland, Mar. 13, 1980, 1978/80

Int. Cl.³ C07D *209/14*

U.S. Cl. 542—417 **5 Claims**

1. A 1:1 metal complex of an azine of the formula



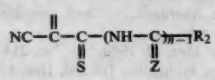
wherein ring A is unsubstituted or is substituted by two to four halogen atoms, by one or two alkyl of 1 to 4 carbon atoms, by one or two alkoxy of 1 to 4 carbon atoms, by phenyl, by phenoxy, by nitro, by benzoylamino or by alkanoylamino having 2 to 6 carbon atoms,

R is hydrogen, alkyl of 1 to 4 carbon atoms, phenyl or naphthyl,

B is phenylene, naphthylene, cyclohexenylene or a pyrazole, pyridine, pyrimidine, quinoline or coumarin radical,

R_1 is OH or SH,

Y is a radical of the formula



in which Z is an O or S atom, n is the number 1 or 2 and R_2 is an alkyl, aralkyl, cycloalkyl or aryl radical or an amino group which is unsubstituted or substituted by an alkyl, cycloalkyl, aralkyl or aryl radical, and

the metal is selected from the group consisting of zinc, cadmium, manganese, cobalt, iron, copper and nickel.

4,366,313

2-DECARBOXY-2-TETRAZOLYL-6-KETO-PGE$_1$ COMPOUNDS

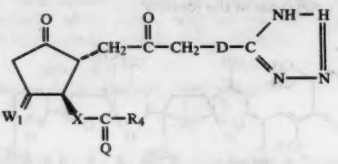
Udo F. Axen, Plainwell, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 829,679, Sep. 2, 1977, Pat. No. 4,205,178, which is a continuation-in-part of Ser. No. 755,675, Dec. 30, 1976, abandoned. This application Aug. 27, 1979, Ser. No. 70,226

Int. Cl.^{3} C07D *257/04*; A61K *31/395*

U.S. Cl. 542—426 **1 Claim**

1. A compound of the formula



wherein

W_1 is α—OH:β—H, α—H:β—OH, α—H:β—H, methylene, or α—CH_2OH:β—H;

wherein

Q is oxo, α—H:β—H, α—R_8:β—OH, or α—OH:β—R_8,

wherein

R_8 is hydrogen or alkyl of one to 4 carbon atoms, inclusive;

wherein

R_4 is

(1) —$C(R_5)(R_6)$—C_gH_{2g}—CH_3

(2) —$C(R_5)(R_6)$—Z—(Ph) or

(3) cis—CH_2—CH=CH—CH_2CH_3,

wherein C_gH_{2g} is alkylene of one to 9 carbon atoms, inclusive, with one to 5 carbon atoms, inclusive, in the chain between —CR_5R_6— and terminal methyl, wherein R_5 and R_6 are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that one of R_5 and R_6 is fluoro only when the other is hydrogen or fluoro and the further proviso that neither R_5 nor R_6 is fluoro when Z is oxa (—O—); wherein Z represents an oxa atom (—O—) or C_jH_{2j} is a valence bond or alkylene of one to 9 carbon atoms, inclusive, with one to 6 carbon atoms, inclusive between CR_5R_6— and the (Ph); wherein (Ph) is phenyl or phenyl substituted by (T)s,

wherein

T is alkyl of one to 4 carbon atoms, inclusive, fluoro, chloro, trifluoromethyl, or —OR_7— wherein R_7 is alkyl of one to 4 carbon atoms, inclusive; and

wherein

s is zero, one, 2 or 3, with the proviso that not more than two T's are other than alkyl and when s is 2 or 3 the T's are either the same or different;

wherein

D is

(1) —$(CH_2)_d$—$C(R_2)_2$—

(2) —CH_2—O—CH_2—Y— or

(3) —CH_2—C≡CH—

wherein d is zero to 5, R_2 is hydrogen, methyl, or fluoro, being the same or different with the proviso that one R_2 is not methyl when the other is fluoro, and Y is a valence bond, —CH_2— or —$(CH_2)_2$—,

wherein

R_9 is hydrogen, methyl or ethyl and R_{28} is hydrogen, alkyl of one to 4 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, or phenyl substituted with alkyl of one to 4 carbon atoms, inclusive; and

wherein

X is

(2) trans—CH=CH—

(2) cis—CH=CH—

(3) —C≡C—

(4) —CH_2CH_2—

4,366,314

DIMETHINE DYESTUFFS, THEIR PREPARATION AND THEIR USE FOR DYEING SYNTHETIC AND NATURAL MATERIALS

Hermann Beecken, Bergisch-Gladbach, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

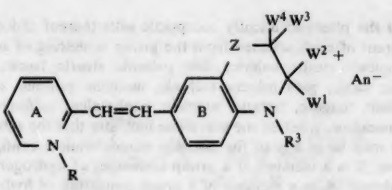
Filed Mar. 19, 1981, Ser. No. 245,287

Claims priority, application Fed. Rep. of Germany, Apr. 1, 1980, 3012599

Int. Cl.^{3} C07D *401/06, 413/06, 417/06*

U.S. Cl. 542—455 **4 Claims**

1. A styryl dyestuff of the formula



in which

R is a lower alkyl or alkenyl group which can be substituted by a non-ionic radical,

R^3 is a C_1- to C_4-alkyl, which can be substituted by phenyl or C_1- to C_4-alkoxycarbonyl, C_3- or C_4-alkenyl, which can be substituted by phenyl, C_2- to C_4-alkyl, which is substituted by one hydroxyl, C_1- to C_4-alkoxy, phenoxy, benzyloxy, benzoyloxy, benzamido, phenylsulphamido, mesylamino, C_1- to C_3-alkylcarbonyloxy, C_1- to C_4-alkylcarbamoyloxy, phenylcarbamoyloxy, chlorine or cyano radical, or C_3- or C_4-alkyl, which is substituted by one or two hydroxyl, methoxy, ethoxy, acetoxy or chlorine radicals, it being possible for the phenyl radicals in turn to be substituted by one hydroxyl, C_1- to C_4-alkoxy, C_1- to C_4-alkoxycarbonyl, C_5- or C_6-cycloalkyl, benzyl, 2-phenylprop-2-yl, phenoxy, benzyloxy, phenylmercapto, phenylsulphonyl, nitro or cyano radical or by 1 to 3 fluorine, chlorine, bromine or C_1- to C_4-alkyl radicals,

W^1, W^2, W^3 and W^4 each independently is hydrogen or C_1- to C_4-alkyl, and

W^1 can also represent phenyl,

W^3 can also represent chlorine,

W^1 and W^3 together can form the remaining members of a cyclohexane ring, or

W^3 and W^4 together can form the remaining members of a cyclopentane or cyclohexane ring,

Z is O, S, N-W^5 or

m is 0, 1 or 2,
W^5, W^6 and W^7 each independently is H or C_1- to C_4-alkyl, ring B can be substituted by C_1- to C_4-alkyl, and
An^- is an anion.

4,366,315
PROCESS FOR PREPARING 3'BROMO-DESACETOXYCEPHALOSPORANIC ACID SULFOXIDE COMPOUNDS

Cornelis A. Bruynes, Koudekerk, and Theodorus K. Jurriens, Delft, both of Netherlands, assignors to Gist-Brocades N.V., Delft, Netherlands

Filed Feb. 13, 1981, Ser. No. 234,545
Claims priority, application United Kingdom, Feb. 14, 1980, 8004925
Int. Cl.³ C07D *501/04;* **A61K** *31/545*
U.S. Cl. 544—16 **16 Claims**

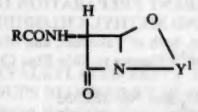
1. A process for the preparation of 3'-bromo-substituted desacetoxycephalosporanic acid sulfoxide compounds comprising protecting the 4-carboxy group of a 3'-unsubstituted cephalosporanic acid sulfoxide by silylating in an inert anhydrous organic solvent with a silylating agent containing at least one nitrogen-bound silyl group and after neutralizing any base generated or left behind by the silyl donor, brominating the silylated compound in situ.

4,366,316
1-OXADETHIACEPHAM COMPOUNDS AND PROCESS FOR PRODUCING SAID COMPOUNDS

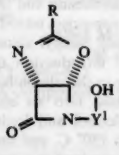
Mitsuru Yoshioka; Shoichiro Uyeo, both of Toyonaka; Yoshio Hamashima, Kyoto; Ikuo Kikkawa, Takarazuka; Teruji Tsuji, Takatsuki, and Wataru Nagata, Nishinomiya, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Continuation of Ser. No. 72,600, Sep. 5, 1979, abandoned, which is a continuation of Ser. No. 877,811, Feb. 14, 1978, abandoned. This application Nov. 18, 1981, Ser. No. 322,662
Claims priority, application Japan, Feb. 15, 1977, 52-15813; Jun. 7, 1977, 52-67025
Int. Cl.³ C07D *498/04*
U.S. Cl. 544—90 **21 Claims**

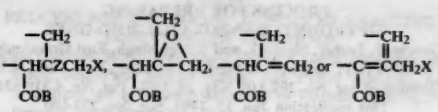
1. A process for preparing a compound of the formula



which comprises treating an oxazolinoazetidinone compound of the formula



with an acid reagent in an inert solvent or a hydroxy-solvent wherein in the above formulas R is a monovalent group (minus the carbonyl function) of an acyl group derived from a carboxylic or carbonic acid; and Y^1 is a divalent group of the formula



wherein
COB is carboxy or protected carboxy;
X is hydrogen or a nucleophilic group; and
Z is a leaving group.

4,366,317
PROCESS FOR SYNTHESIS OF N-(HYDROCARBYL)SUBSTITUTED-P-MENTHANE-3-CARBOXAMIDE

Stephen A. Haut, Chesterfield, and Roger A. Comes, Midlothian, both of Va., assignors to Philip Morris Incorporated, New York, N.Y.

Filed Jun. 22, 1981, Ser. No. 276,328
Int. Cl.³ C07C *102/00;* **C07D** *241/00, 213/00*
U.S. Cl. 544—336 **20 Claims**

1. A process for the synthesis of N-hydrocarbyl-p-menthane-3-carboxamide which comprises (1) reacting 3-p-menthyl halide with magnesium in an anhydrous solvent medium to form 3-p-menthylmagnesium halide; and (2) reacting the 3-p-menthylmagnesium halide with hydrocarbyl isocyanate at a temperature between about −30° C. and −70° C. to form N-hydrocarbyl-p-menthane-3-carboxamide product.

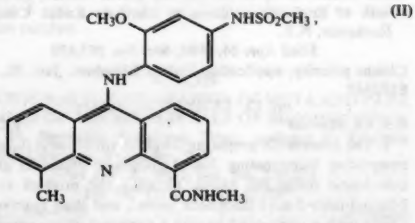
11. A process for the synthesis of N-hydrocarbyl-p-menthane-3-carboxamide which comprises (1) reacting 3-p-menthyl halide with magnesium in an anhydrous solvent medium to form 3-p-menthylmagnesium halide; (2) reacting the 3-p-menthylmagnesium halide with hydrocarbyl isocyanate at a temperature between about −30° C. and −70° C. to form a product mixture comprising N-hydrocarbyl-p-menthane-3-carboxamide and N-(3-p-menthylcarbonyl)-N-hydrocarbyl-N'-hydrocarbylurea; and (3) heating the N-(3-p-menthylcarbonyl)-N-hydrocarbyl-N'-hydrocarbylurea in a solvent medium under alkaline pH conditions to produce additional N-hydrocarbyl-p-menthane-3-carboxamide product.

4,366,318
COMPOUND HAVING ANTITUMOR PROPERTIES

Bruce F. Cain, deceased, late of Auckland, New Zealand (by Patricia J. Cain, executor), and Graham J. Atwell, Auckland, New Zealand, assignors to Development Finance Corporation of New Zealand, Wellington, New Zealand

Filed Apr. 27, 1981, Ser. No. 257,857
Claims priority, application New Zealand, Apr. 28, 1980, 193551
Int. Cl.³ C07D *219/10;* **A61K** *31/47*
U.S. Cl. 546—106 **2 Claims**

1. The compound 4'-(9-[4-[N-methyl-carboxamido]-5-methyl]acridinylamino)methanesulphon-m-anisidide, represented by the formula



(II)

or an acid addition salt thereof.

4,366,319

PROCESS FOR PREPARING 5-(PYRIDINYL)BENZOXAZOL-2(3H)-ONES

George Y. Lesher, Shodack, and Baldev Singh, East Greenbush, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 209,416, Nov. 24, 1980, Pat. No. 4,310,531.
This application Jun. 15, 1981, Ser. No. 273,480
Int. Cl.³ C07D *263/58*
U.S. Cl. 546—270 2 Claims

1. The process which comprises reacting 2-amino-4-PY-phenol with carbonyldiimidazole to produce 5-PY-benzoxazol-2(3H)-one where PY is 4- or 3-pyridinyl or 4- or 3-pyridinyl having one or two lower-alkyl substituents.

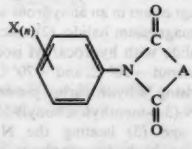
4,366,320

4-SUBSTITUTED PHENYL-1,2,4-TRIAZOLINE-3,5-DIONES AND THEIR DIHYDRO ANALOGS AS ANALYTICAL REAGENTS

Terry J. Gilbertson, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Jul. 31, 1980, Ser. No. 174,050
Int. Cl.³ B65D *71/00*; G01N *31/22, 33/50*; C07D *249/12*
U.S. Cl. 548—264 6 Claims

1. A compound of the formula



wherein $X_{(n)}$ is pentafluoro; 2',4',6'-trifluoro; or 4'-trifluoromethyl; and A is N=N or

with the proviso that when $X_{(n)}$ is 2',4',6'-trifluoro or 4'-trifluoromethyl, A is N=N.

4,366,321

PREPARATION OF 2-HALO-3-NITRO-5-ACYL THIOPHENES AND INTERMEDIATE COMPOUNDS

Leslie Shuttleworth, Ormskirk, and David Mullen, Liverpool, both of England, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 24, 1981, Ser. No. 257,450
Claims priority, application United Kingdom, Jan. 30, 1981, 8102948
Int. Cl.³ C07D *333/00, 333/24*
U.S. Cl. 549—68 9 Claims

1. The process for preparing 2-halo-3-nitro-5-acyl thiophene comprising halogenating 2-acyl thiophene oxime to give 2-halo-5-acyl thiophene oxime, nitrating the product to give 2-halo-3-nitro-5-acyl thiophene oxime, and then reacting the oxime with a compound having a carbonyl group capable of oxime exchange to give 2-halo-3-nitro-5-acyl thiophene.

4,366,322

METHOD FOR THE PRODUCTION OF FURFURAL FROM VEGETABLE MATTER

Bernard P. M. Raymond, Ondres, France, assignor to Bertin & Cie, Plaisir, France

PCT No. PCT/FR80/00128, § 371 Date Apr. 3, 1981, § 102(e) Date Apr. 3, 1981, PCT Pub. No. WO81/00407, PCT Pub. Date Feb. 19, 1981
PCT Filed Jul. 31, 1980, Ser. No. 253,851
Claims priority, application France, Aug. 3, 1979, 79 19935
Int. Cl.³ C07D *307/50*
U.S. Cl. 549—489 19 Claims

1. A process for the production of furfural from vegetable material containing pentosans, comprising:

(a) in a first reactor, hydrolyzing pentosans present in said vegetable matter in the presence of a concentrated strong acid at or near atmospheric pressure at a temperature of about 20° to 70° C., thereby obtaining a solution of pentosis; and (b) in a second reactor, dehydrating said solution of pentoses by the action of steam applied at a pressure of about 1 to 2 bars absolute and at a temperature up to 110° C. in a concentrated acid medium, thereby yielding furfural.

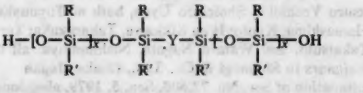
4,366,323

POLYMERIZATION OF ARYLENE BIS-SILANOLS

Harold Rosenberg, and Tsu-tzu Tsai, both of Dayton, Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 27, 1982, Ser. No. 343,000
Int. Cl.³ C07F *7/08*
U.S. Cl. 556—433 4 Claims

1. A process for making arylene siloxanylene polymers which comprises contacting a monomer of the formula



wherein Y is an arylene or substituted arylene moiety; R and R' are lower alkyl, substituted lower alkyl or phenyl, and x is an integer having a value of 0 or 1; with phosgene in the presence of an aromatic heterocyclic amine inert to reaction with phosgene.

4,366,324

PROCESS FOR CONCURRENT PREPARATION OF ORGANOSILOXANES AND METHYL CHLORIDE

Kiichi Habata; Kesazi Ichikawa, both of Takasaki, and Mutsuo Shimizu, Annaka, all of Japan, assignors to Shin-Etsu Chemical Co. Ltd., Tokyo, Japan

Filed Nov. 18, 1981, Ser. No. 322,552
Claims priority, application Japan, Nov. 25, 1980, 55-165533
Int. Cl.³ C07F *7/08*
U.S. Cl. 556—460 10 Claims

1. A process for concurrently producing methyl chloride and organosiloxanes from an organochlorosilane and methyl alcohol in a continuous operation which comprises introducing simultaneously the organochlorosilane and methyl alcohol in such a proportion that the amount of introduction of the methyl alcohol is substantially equimolar to the silicon-bonded chlorine atoms in the organochlorosilane into an aqueous reaction medium comprising methyl alcohol and hydrogen chloride kept at a temperature of 70° to 150° C. and under a pressure of atmospheric or higher and contained in a reaction vessel at or near the bottom thereof, the rates of introduction of the organochlorosilane and methyl alcohol being controlled such that the concentration of hydrogen chloride in the aqueous reaction medium does not substantially exceed the azeotropic concentration at the temperature and under the pressure

of operation at least at or in the vicinity of the surface of the aqueous reaction medium.

4,366,325

PROCESS FOR THE PREPARATION OF 3-PHENOXY-BENZALDEHYDES

Karlfried Wedemeyer, Cologne, and Helmut Fiege, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

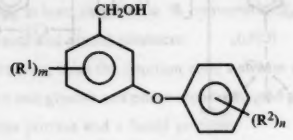
Filed Oct. 8, 1980, Ser. No. 195,157

Claims priority, application Fed. Rep. of Germany, Oct. 30, 1979, 2943805

Int. Cl.³ C07C *45/38*

U.S. Cl. 568—432 11 Claims

1. A process for the preparation of 3-phenoxy-benzaldehyde which comprises contacting 3-phenoxy-benzyl alcohol of the formula



in which

m represents a number from 1 to 4

n represents a number from 1 to 5 and

R^1 and R^2 are identical or different and denote hydrogen, halogen, alkyl, cycloalkyl, aralkyl, alkoxy, cycloalkoxy, aryloxy or perfluoroalkyl

with an oxygen containing gas in aqueous alkali at a temperature from 0° to 110° C. in the presence of a platinum metal catalyst and in the presence of lead and/or bismuth and/or tellurium and/or a compound of said lead, bismuth or tellurium, said lead and/or bismuth and/or tellurium and/or compound thereof being present in the reaction mixture in an amount of at least 5×10^{-6} mol per mol of 3-phenoxy-benzyl alcohol to be oxidized.

4,366,326

OXYALKYLATED FATTY ALCOHOLS HAVING END GROUPS BLOCKED BY REACTION WITH PROPYLENE

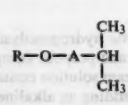
Wolfgang Vodrazka, Freinsheim; Erhard Klahr, Ludwigshafen; Knut Oppenlaender, Ludwigshafen; Wolfgang Trieselt, Ludwigshafen; Dieter Stoeckigt, Ludwigshafen, and Werner Neumann, Reilingen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Rheinland-Pfalz, Fed. Rep. of Germany

Filed Mar. 6, 1981, Ser. No. 241,104

Int. Cl.³ C07C *43/00, 41/03*

U.S. Cl. 568—613 1 Claim

1. A compound of the formula I



I

where R is C_8–C_{20}-alkyl and A is a polyethylene oxide radical composed of from 5 to 15 ethylene oxide units.

4,366,327

PROCESS FOR PRODUCING ETHERS BY REACTING OLEFINS WITH ALCOHOLS

Alain Convers, Rueil-Malmaison; Bernard Torck, Boulogne sur Seine; Jean-Paul Euzen, Egully, and Pierre Amigues, La Muladiere, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Apr. 28, 1981, Ser. No. 258,317

Claims priority, application France, Apr. 28, 1980, 80 09727

Int. Cl.³ C07C *41/06*

U.S. Cl. 568—697 9 Claims

1. In a process for producing an ether by reacting an olefin with an alcohol in the liquid phase, in the presence of a solid etherification catalyst of the sulfonic resin type in acid form, in expanded bed, the improvement comprising effecting the reaction in at least two reaction zones in series, periodically modifying the order of passage of the reactants through the reaction zones by disconnecting from the circuit the first zone through which the charge passes and feeding the reactants directly to the following reaction zone, replacing the used catalyst of the disconnected zone with fresh catalyst, and connecting the resultant zone containing fresh catalyst to the circuit in the last position.

4,366,328

INDENE COMPOUND AND NOVEL PROCESS FOR PRODUCING INDENE COMPOUNDS

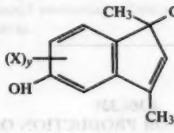
Satoshi Numata, Yokohama; Kiyoshi Nakatani, Tokyo; Noboru Yamazaki, and Teruo Yuasa, both of Nagoya, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Nov. 26, 1979, Ser. No. 97,147

Int. Cl.³ C07C *37/52*

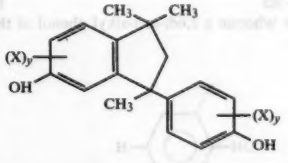
U.S. Cl. 568—734 12 Claims

1. A process for producing an indene compound of the formula



(III)

wherein X represents a hydrogen atom, a halogen atom, a hydroxyl group, or a methyl group, and y is 0 or an integer of from 1 to 3, which comprises heat-decomposing an indane compound of the formula



(II)

wherein X and y are as defined, in the presence of an acid or alkaline catalyst.

4,366,329

PROCESS FOR THE SEPARATION OF META AND PARA ISOMERS OF THE SODIUM SALT OF BROMOPHENOL

Peter W. Raynolds, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 22, 1981, Ser. No. 276,271

Int. Cl.³ C07C *39/27, 37/68*

U.S. Cl. 568—755 2 Claims

1. Process for separating meta and para isomers of a sodium salt of bromophenol which comprises adding sodium hydrox-

ide to an aqueous solution of a mixture of meta and para bromophenol to precipitate the meta isomer.

4,366,330

INTERMEDIATES USEFUL IN THE PRODUCTION OF LIQUID CRYSTAL COMPOUNDS

George W. Gray; David Lacey, both of Cottingham; John A. Jenner, Wimborne, and Martin G. Pellatt, Wimborne, all of England, assignors to BCH Chemicals Limited and The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, both of, England

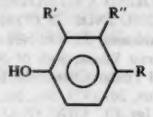
Filed Sep. 30, 1980, Ser. No. 192,556

Claims priority, application United Kingdom, Oct. 2, 1979, 7934128

Int. Cl.³ C07C *39/27*

U.S. Cl. 568—775 12 Claims

1. A phenol which is adapted for reaction with an aryl or cycloalkyl carboxylic acid to produce an ester having a dielectric anistropy which adapts it for a liquid crystal material for electro-optical display devices and having the formula



wherein one of R′ and R″ is fluorine and the other is hydrogen and R is an alkyl group having from 3 to 11 carbon atoms, an aryl substituted alkyl group, or a cyclohexyl substituted alkyl group.

4,366,331

PROCESS FOR PRODUCTION OF 2,6-DI-TERT-ALKENYL PHENOLS

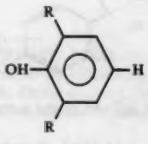
Dane K. Parker, Massillon, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 159,081, Jun. 13, 1980, abandoned. This application Dec. 14, 1981, Ser. No. 330,506

Int. Cl.³ C07C *37/11, 39/06*

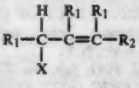
U.S. Cl. 568—785 6 Claims

1. A process wherein a 2,6di-tert-alkyl phenol of the structural formula:



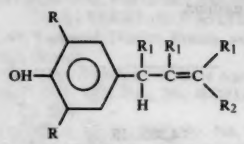
(I)

is reacted with an allyl halide of the structural formula:



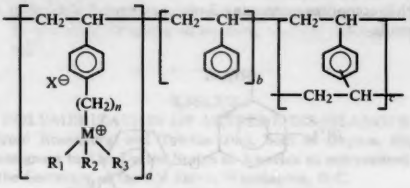
(II)

in the presence of an aqueous solution of an alkali metal hyroxide, a catalyst, and heat to yield a 2,6-di-tert-alkyl-4-alkenyl phenol of the structural formula:



(III)

wherein R is a tertiary alkyl radical of 4 to 8 carbon atoms and R_1 is a monovalent radical selected from the group consisting of hydrogen, alkyl radicals of 1 to 6 carbon atoms; and R_2 is a monovalent radical selected from the group consisting of hydrogen, alkyl radicals of 1 to 6 carbon atoms and aryl radicals of 6 to 10 carbon atoms; and X is a chlorine or bromine radical, the improvement characterized in the use of a triphase catalyst defined by the formula:



wherein the ratio of a to b pluc c may vary between 1 to 1 to 1 to 100 with a preferred range being 1 to 5 to 1 to 50 and wherein R_1, R_2 and R_3 are the same or different radicals selected from the group comprised of alkyl radicals of 1 to 12 carbon atoms, secondary alkyl radicals of 3 to 12 carbon atoms, cycloalkyl radicals of 5 to 8 carbon atoms; $X^{\ominus}$ is a radical selected from the group consisting of chlorine, fluorine and bromine and hydrogen sulfate radicals; M is phosphorus or nitrogen and n is equal to a whole positive integer from 1 to 12.

4,366,332

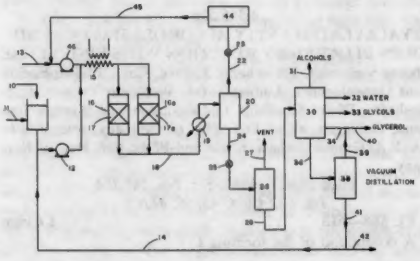
CATALYTIC HYDROGENOLYSIS OF ALDITOLS TO PRODUCT GLYCEROL AND POLYOLS

James C. Chao, West Nyack, N.Y., and Derk T. A. Huibers, Pennington, N.J., assignors to Hydrocarbon Research, Inc., Lawrenceville, N.J.

Filed Jan. 21, 1981, Ser. No. 227,036

Int. Cl.³ C07C *31/22, 31/20, 31/24, 31/26*

U.S. Cl. 568—863 12 Claims



1. A process for catalytic hydrogenolysis of an alditol solution to produce glycerol and polyols, comprising the steps of:

(a) providing a feedstream solution containing at least about 10 W.% alditol and adding an alkaline promoter material to the feedstream sufficient to provide a pH within the range of 7–14;

(b) preheating the feed solution and hydrogen gas to at least

about 200° F. temperature, and introducing the heated feedstream mixture into a fixed bed reaction zone containing a particulate high activity stabilized nickel catalyst containing 50–65 w. % porous nickel on silica support and having 4 × 20 mesh (0.187–0.033 inch) particle size (U.S. Sieve Series), said catalyst being regenerated after 20–60 hours use by washing it with a water-methanol solution and then contacting said catalyst with flowing hydrogen at 550°–600° F. temperature and at reduced pressure for 2–8 hours to provide improved selectivity for a glycerol product;

(c) maintaining the reaction zone conditions within the range of 420°–500° F. temperature, 1200–2000 psig hydrogen partial pressure, 1.5–3.0 liquid hourly space velocity (LHSV), and catalyst age exceeding about 8 hours for achieving at least about 30 w. % conversion of the alditol to glycerol and glycol products;

(d) withdrawing from the reaction zone a stream containing glycerol and glycols and phase separating said stream into a gaseous portion and a liquid portion;

(e) distilling said liquid portion to remove alcohols, water and glycols to produce higher purity glycerol product, and a heavy bottoms liquid stream containing alditols; and

(f) recycling at least a portion of said bottoms stream to the reaction zone for further catalyst conversion of alditols to mainly glycerol product.

4,366,333

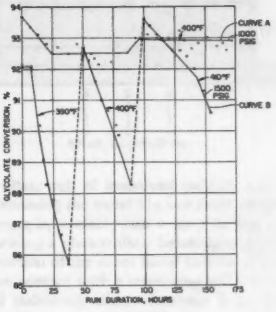
PROCESS OF PROLONGING THE LIFE OF ESTER HYDROGENATION CATALYST

John B. Wilkes, Richmond, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 52,515, Jun. 27, 1979, abandoned. This application Mar. 24, 1980, Ser. No. 132,916

Int. Cl.[3] C07C *31/20*

U.S. Cl. 568—864 **5 Claims**



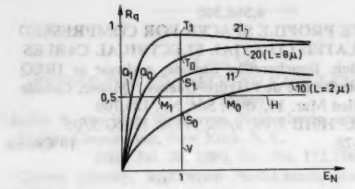
1. In the process of preparing ethylene glycol by hydrogenating a mixture comprising glycolic acid esters with more than 22% of the esters in the form of polyglycolide esters in the presence of a hydrogenation catalyst, the improvement of extending the life of said hydrogenation catalyst, which comprises heating said mixture to a temperature in about the range 300°–525° F., before hydrogenating it, with from 250 to 400 mol % excess of alcohol based on polyglycolide esters for a period of 20–90 minutes to transesterify said mixture and thereby lowering the polyglycolide ester content below about 22%, the aforesaid percentages being by weight based on the total ester content.

4,366,334

PHOTOVOLTAIC CELL USABLE AS A SOLAR CELL

Baudouin de Cremoux; Pierre Poulain, and Nicole Sol, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Jan. 29, 1981, Ser. No. 229,524
Claims priority, application France, Feb. 1, 1980, 80 02249
Int. Cl.³ H01L *31/06*
U.S. Cl. 136—255 13 Claims



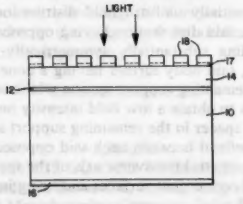
1. A photovoltaic cell of the type comprising an ohmic bottom contact comprising a metal layer coated with a semiconductor layer, an active semiconductor layer whose thickness is approximately the same as the diffusion length of the semiconductor material, a semiconductor or metallic layer forming a rectifying junction with the active layer in such a way that the assembly can have a photovoltaic effect, further comprising between the active semiconductor layer and the ohmic bottom contact an intermediate layer which is much thinner than the active semiconductor layer and which is formed from a semiconductor compound with a forbidden band width greater than that of the active layer, the crystalline parameters of the materials of the intermediate layer and the active layer differing by 5 parts per 1000 or less.

4,366,335

INDIUM OXIDE/N-SILICON HETEROJUNCTION SOLAR CELLS

Tom Feng, Morris Plains, and Amal K. Ghosh, New Providence, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 222,367, Jan. 5, 1981, abandoned. This application Apr. 30, 1981, Ser. No. 258,935
Int. Cl.³ H01L *31/06*
U.S. Cl. 136—255 8 Claims



1. A high efficiency indium oxide/n-silicon heterojunction solar cell comprising:

an n-type silicon substrate having at least one major area surface coated with a thin layer of silicon oxide, SiO_2;

a layer of indium oxide deposited onto said silicon oxide and forming a heterojunction therewith and concurrently forming an anti-reflection layer to said surface;

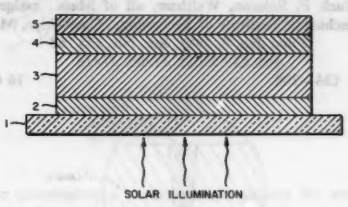
ohmic contact means for making electrical connection to said silicon and said indium oxide layers whereupon illumination said solar cell with an equivalent of Air Mass One solar energy, said solar cell exhibits a conversion efficiency in excess of about 10%.

4,366,336

AGE AND HEAT STABILIZED PHOTOVOLTAIC CELLS

Lee F. Donaghey, Berkeley, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Oct. 16, 1980, Ser. No. 197,414
Int. Cl.³ H01L *31/06, 31/18*
U.S. Cl. 136—256 20 Claims



1. A photovoltaic cell of improved stability comprising a barrier layer containing the metal M_1, one facial surface of said barrier layer being in contact with a layer of semiconductor material and forming a photovoltaic heretojunction therewith, and at least a portion of the other facial surface of said barrier layer in intimate contact with a stabilizing metal electrode;

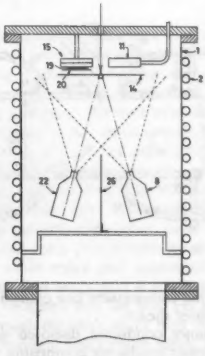
wherein said stabilizing metal electrode is an alloy comprised of at least two metallic elements, one of which is M_1, such that the tendency of M_1 to diffuse between said stabilizing metal electrode and said barrier layer is approximately zero.

4,366,337

P-SI/N-CdS HETEROJUNCTION PHOTOVOLTAIC CELLS

Paolo Alessandrini, Rome; Lucio De Angelis, Palombara Sabina; Fabrizio Galluzzi, Rome; Francesco Losciale, Rome, and Ernesto Scafe', Rome, all of Italy, assignors to E.N.I. Ente Nazionale Idrocarburi, Rome, Italy

Filed Aug. 13, 1980, Ser. No. 177,597
Claims priority, application Italy, Sep. 10, 1979, 25569 A/79
Int. Cl.³ H01L *31/06, 31/18*
U.S. Cl. 136—258 7 Claims



1. A photovoltaic cell comprising a region of n-type semiconductor material in intimate contact with a region of p-type semiconductor material, both regions being in contact with conducting electrodes, wherein the n-type semiconductor material and the p-type semiconductor material have lattice parameters which differ from each other by a percentage equal to or greater than 5%, the n-type semiconductor material being CdS containing more than 1% In, and the p-type semiconductor material being Si.

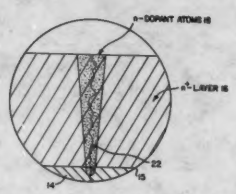
2. A photovoltaic cell as claimed in claim 1, wherein the p-type semiconductor material is chosen from mono- and poly-crystalline Si having a resistivity of between 100 and 0.01 Ωcm.

4,366,338

COMPENSATING SEMICONDUCTOR MATERIALS

George W. Turner, Stoneham; John C. C. Fan, Chestnut Hill, and Jack P. Salerno, Waltham, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Jan. 9, 1981, Ser. No. 223,768
Int. Cl.³ H01L *31/06, 31/18*
U.S. Cl. 136—258 16 Claims



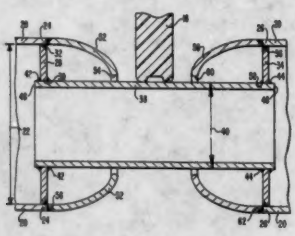
9. A device formed of semiconductor material and having a substrate, a first layer on said substrate of a certain type conductivity, a second layer on said first layer of opposite conductivity to said first layer and forming a junction therebetween, the improvement comprising compensating interstices in said second layer formed by introducing dopant into said second layer through interstices in the second layer and across said junction into the interstices of the first layer.

4,366,339

SEMI-FLEXIBLE GAS-INSULATED TRANSMISSION LINE USING ELECTRIC FIELD STRESS SHIELDS

Alan H. Cookson, Churchill Borough; Steinar J. Dale, Monroeville, and Philip C. Bolin, Wilkins Township, Allegheny County, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 2, 1981, Ser. No. 298,691
Int. Cl.³ H01B *9/06, 9/04;* H02G *5/06*
U.S. Cl. 174—21 JS 9 Claims



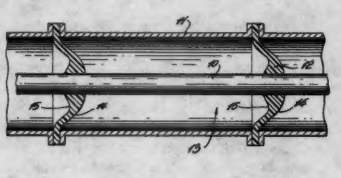
1. A gas-insulated transmission line comprising:
an elongated outer sheath;
an elongated inner conductor disposed within said outer sheath, said inner conductor comprising a pair of longitudinally spaced-apart cylindrical main conductor sections having a first diameter and facing ends, a flexing element fixedly secured to each main conductor section end and extending radially inwardly therefrom, a cylindrical conductor hub section having a second diameter less than said first diameter fixedly secured to both flexing elements adjacent the ends of said conductor hub section, and a curved stress shield having an opening formed therein fixedly secured to each main conductor section end with said conductor hub section extending through said stress shield openings, said stress shields being spaced-apart from said conductor hub section and extending both longitudinally-outwardly and radially-inwardly from said main conductor section ends;
an insulating gas electrically insulating said inner conductor from said outer sheath; and
means for insulatably supporting said inner conductor in said outer sheath.

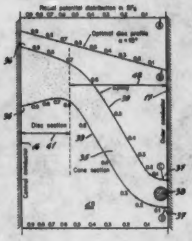
4,366,340

COMPOSITE PROFILE SPACER FOR COMPRESSED GAS INSULATED CO-AXIAL ELECTRICAL CABLES

Ngoc-Giao Trinh, Boucherville, Canada, assignor to IREQ Institut de Recherche de l'Hydro-Quebec, Quebec, Canada

Filed Mar. 13, 1980, Ser. No. 129,700
Int. Cl.³ H01B *9/04, 9/06, 17/58;* H02G *5/06*
U.S. Cl. 174—28 10 Claims





1. A spacer comprising a composite profile shaped body formed of an electrically insulating material to support a central conductor substantially concentric in a tubular outer sheath, said body having a disc section configuration in a first support section to be located immediate the central conductor to obtain substantially uniform field distribution at the first support section, said disc section having opposed convergent surfaces extending substantially symmetrically in said first support section, said body further having a cone section configuration in a remaining support section which is to extend to the outer sheath to obtain a low field intensity on the opposed surfaces of said spacer in the remaining support section, and a contact angle defined between each said opposed convergent surfaces and the central transverse axis of the spacer inwardly of said opposed convergent surfaces and being in the range of about 65° to 80°.

6. A compressed gas insulated high voltage bus of co-axial configuration including a central conductor, a tubular outer sheath, and a plurality of spacers, each said spacer having a composite profile shaped body formed of an electrically insulating material and extending radially in an area between said central conductor and said outer sheath in a spaced apart manner to support said central conductor substantially concentric with said outer sheath, said body having a disc section configuration in a first support section adjacent said central conductor to obtain substantially uniform field distribution in an area immediate said central conductor, said disc section having opposed convergent surfaces extending substantially symmetrically in said area immediate said central conductor, said body further having a cone section configuration in a

remaining support section extending to said outer sheath to obtain a low field intensity on the opposed surfaces of said spacer in the remaining portion of said area extending to said outer sheath, and a contact angle defined between each said opposed convergent surfaces and said central conductor inwardly of said opposed convergent surfaces and being in the range of about 65° to 80°.

4,366,341

BRIDGE FOR CONNECTING CABLE CHANNEL SYSTEMS

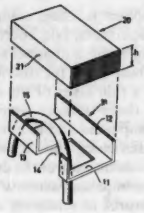
Martin A. van Riet, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 28, 1980, Ser. No. 172,786

Claims priority, application Netherlands, Aug. 17, 1979, 79062267

Int. Cl.³ H02G *3/28*

U.S. Cl. 174—48 **5 Claims**



1. A connecting bridge for use as a support for an electric connecting cable between two cable channel systems which are directed transversely of one another, at least one bridge portion of one piece, said bridge portion having a U-shaped cross-section, there being an opening in at least the central portion of the U-shaped cross-section which is a passage for the connecting cable, this opening being bounded on all sides the mounted condition of the bridge, characterized in that in the mounted condition of the bridge portion the circumference of the opening is only partially bounded by the bridge portion which is of one piece and the apparatus also includes an auxiliary element, which is movable relative to said bridge portion, said bridge portion providing the further bounding of the opening, and that in the absence of the auxiliary element the opening has an open periphery.

4,366,342

CONDUCTIVELY COATED EMBOSSED ARTICLES

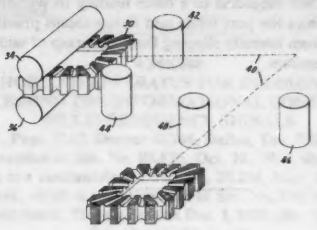
James G. Breedlove, Burnsville, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Continuation of Ser. No. 917,577, Jun. 21, 1978, abandoned, which is a continuation-in-part of Ser. No. 755,955, Dec. 30, 1976, abandoned. This application Sep. 26, 1980, Ser. No. 191,329

Int. Cl.³ H05K *5/00*

U.S. Cl. 174—52 FP **19 Claims**

1. As an article of manufacture a monolithic body with two major surfaces having on at least one of said major surfaces and integral therewith and on at least one other surface or edge and integral therewith embossments in bas-relief with sides and with planar outer surfaces, said embossments having a height in the range of 10 to 35% of the thickness of the body, only the planar outer surfaces of all said embossments being covered with electrically conductive coatings, all other surfaces of said monolithic body being uncovered with electrically conductive coating, said coated planar outer surfaces of said embossments



together constituting a predetermined pattern for electrical interconnections.

4,366,343

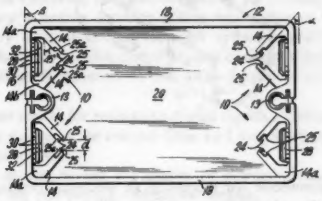
CABLE CLAMP MEANS AND CABLE ENTRY PORT CLOSURE MEANS FOR ELECTRICAL OUTLET BOXES AND THE LIKE

Thomas S. Slater, Port Washington, and Wade R. Bowden, Jr., Northport, both of N.Y., assignors to Slater Electric Inc., Glen Cove, N.Y.

Filed Feb. 21, 1978, Ser. No. 879,767

Int. Cl.³ H02G *3/08*

U.S. Cl. 174—65 R **18 Claims**



1. In an electrical outlet box having a wall structure including a backwall with a generally continuous sidewall upstanding therefrom defining a chamber interior thereof which opens along front edges of the sidewall, at least one cable entry port being formed in a portion of the wall structure for permitting insertion of an electrical power cable into the box, cable clamp means associated with at least one cable entry port, each said cable clamp means including a pair of oppositely disposed panel-like members formed integrally with the wall structure adjacent said cable entry port and depending angularly inwardly of the box towards each other, each said cable clamp means also including entry port closure means adapted generally to close the cable entry port associated with the cable clamp means when said entry port is not in use generally for preventing entry of debris into the box, yet being adapted to permit access through the cable entry port when a cable is to be inserted therethrough, said closure means including

a generally frangible web-like member extending between adjacent end edges of each pair of panel-like members and flange means projecting inwardly from said wall structure and extending adjacent to and essentially parallel to non-adjacent free end edges of its corresponding pair of panel-like members, said panel-like members being adapted to permit insertion of a cable into the box through the cable entry port associated therewith when said frangible web is broken, yet clamp the cable against withdrawal from said port, such that when the cable entry port has been opened by fracture of said frangible web, said panel-like members

deflect generally away from each other during insertion of the cable to permit passage of the cable into the box, but grasp the cable to resist its removal from the cable entry port when subjected to a force tending to withdraw the cable from the port while said flange means prevents the cable from laterally slipping from the grasp of said panel-like members.

4,366,344

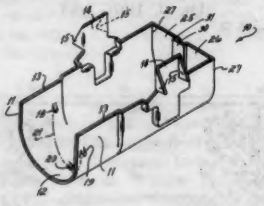
CONNECTOR FOR A HELICALLY GROOVED ELECTRICAL CONDUCTOR

Robert K. Sheehan, 571 Rolling Rock La., Cincinnati, Ohio 45230

Filed Jun. 13, 1980, Ser. No. 159,156

Int. Cl.³ H02G *3/18, 13/18;* B23P *11/02*

U.S. Cl. 174—65 R **6 Claims**



1. A connector for mounting an electrical conductor surrounded by a helically grooved metallic shield to a junction box having a wall and a hole in said wall through which electrical conductors pass comprising,

a one-piece sheet metal member,

said member being elongated and having a U-shaped cross section including two legs and a semi-cylindrical bight portion,

said legs presenting longitudinal parallel edges engageable with said junction box wall and end edges extending perpendicular to said longitudinal edges,

an inwardly-projecting tab on each said leg intermediate the ends of said member and longitudinally spaced from each other and engageable in a helical groove of said shield to retain said shield against longitudinal movement with respect to said connector,

a barbed fastener projecting from the longitudinal edges of each leg and adapted to be inserted in said hole to retain said connector on said junction box wall,

each barbed fastener being spaced only a slight distance from said longitudinal edge so said longitudinal edge will lie against said junction box wall when said barbs project through said hole therein,

each leg having a flap projecting transversely from an end edge of said leg across one end of said member to form an end wall for each member,

whereby said shield may be laid in said connector and held by said tabs, said connector thereafter being mounted on said junction box wall by inserting said fasteners in said hole.

4,366,345

ELECTROMECHANICAL COMPONENT SEALING SYSTEM

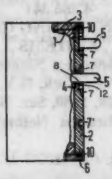
Bruno Jäegle, Petershausen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Apr. 26, 1979, Ser. No. 33,733

Claims priority, application Fed. Rep. of Germany, Jul. 18, 1978, 7821508

Int. Cl.³ H05K *5/06*

U.S. Cl. 174—52 S **6 Claims**



1. An electrical component housing, comprising: a base plate having connecting pin apertures, said apertures being adapted to be sealed with casting resin; a channel system means on an exterior surface of the base plate for distributing at least partially by capillary flow a thin layer of the casting resin to the apertures so as to seal them without significantly increasing overall height of the component and to control the resin flow, and a viscosity of the resin being chosen so as not to penetrate through the apertures to an interior of the component; and said channel system means comprising narrow capillary channels connecting the pin apertures to relatively wide feed channels which are open to receive resin poured onto the feed channels from above the base plate with the component in an inverted position.

4,366,346

ARTIFICIAL REVERBERATION APPARATUS

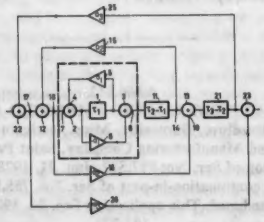
Eise C. Dijkmans, Eindhoven, Netherlands; Nico V. Franssen, deceased, late of Knegsel, Netherlands, and by Friedrich J. De Haan, administrator, Dommelen, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 14, 1980, Ser. No. 140,288

Claims priority, application Netherlands, Apr. 24, 1979, 7903195

Int. Cl.³ G01K *11/00*

U.S. Cl. 179—1 J **14 Claims**



3. An artificial reverberation apparatus comprising, an input terminal, first, second, third and fourth signal combining circuits each having input means and an output, a first delay device, means coupling the third signal combining circuit, the first signal combining circuit, the first delay device, the second signal combining circuit and the fourth signal combining circuit in cascade in the order named to the input terminal to form a signal path having a first junction point between the first delay device and the second signal combining circuit, a second junction point between the first signal combining circuit and

the first delay device, a third junction point between the second and the fourth signal combining circuits and a fourth junction point between the third and the first signal combining circuits, a second delay device coupled in cascade with the third and fourth signal combining circuits in said signal path, first and second feedback circuits coupled between said first and third points, respectively, and the input means for said first and third signal combining circuits, respectively, first and second transmission circuits coupled between said second and fourth points, respectively, and the input means of the second and fourth signal combining circuits, respectively, so that the first transmission circuit bypasses the first delay device and the second transmission circuit bypasses the first delay device and the first and second signal combining circuits, and wherein the gain of the first transmission circuit is chosen so that the ratio of the gains of first and second signal paths from said second point to the output of the second signal combining circuit via the first transmission circuit and via the first delay device, respectively, is substantially equal and opposite to the gain of a circuit loop including the first delay device and the first feedback circuit, said gain being less than one, and the gain of the second transmission circuit is chosen so that the ratio of the gains of third and fourth signal paths from said fourth point to the output of the fourth signal combining circuit via the second transmission circuit and via said first and second delay devices, respectively, is substantially equal and opposite to the gain of a circuit loop including said first and second delay devices and the second feedback circuit, said gain being less than one.

4,366,347

APPARATUS FOR SELECTING TERMINAL EQUIPMENT IN TELEPHONE LINES

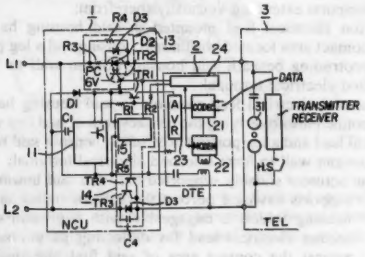
Toshiharu Takatsuki, Tokyo; Ken-ichi Fujiwara, Amagasaki; Jutaro Nomura, Amagasaki, and Shigeru Okamura, Amagasaki, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha and Nippon Telegraph and Telephone Public Corp., both of Tokyo, Japan

Filed Oct. 17, 1979, Ser. No. 85,683

Claims priority, application Japan, Oct. 20, 1978, 53-129078

Int. Cl.³ H04M *11/06*

U.S. Cl. 179—2 DP **4 Claims**



1. An apparatus for selectively switching a connection between a telephone and a data transmitter at a terminal of a telephone line, so as to connect one of said telephone and said data transmitter to said telephone line for communication, where the switching is controlled by detecting the line impedance of said telephone line at said terminal by means of an exchange center of said telephone line, wherein the improvement comprises:

a current detection circuit, including a photocoupler, for detecting the current of said telephone during the operation of said data transmitter;

a switch circuit for opening said telephone line for a predetermined period of time in response to the output of the current detection circuit;

a circuit for detecting said line impedance during said predetermined period of time, said circuit being located in said exchange center; and

means for switching said connection between said telephone and said data transmitter, said means for switching being connected to the output of said circuit for detecting line impedance so as to connect the telephone to the telephone line in response to the output of said circuit for detecting line impedance indicating an off-hook condition of the telephone.

4,366,348

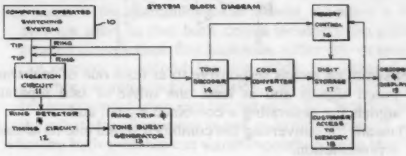
METHOD AND APPARATUS FOR DECODING AND PROCESSING THE INFORMATIONAL CONTENT OF MULTI-FREQUENCY SIGNALS

John W. Pope, P.O. Drawer 45246, Dallas, Tex. 75245

Continuation of Ser. No. 85,876, Oct. 18, 1979, abandoned, which is a continuation of Ser. No. 20,230, Mar. 12, 1979, abandoned, which is a continuation of Ser. No. 848,767, Nov. 3, 1977, abandoned. This application Dec. 1, 1980, Ser. No. 211,851

Int. Cl.³ H04M *11/00*

U.S. Cl. 179—84 VF **10 Claims**



1. Apparatus for receiving information bearing multi-frequency pulse signals, for decoding the received signals and for storing information, so decoded, in one of a plurality of storage locations, for selective retrieval, comprising:

means for receiving the multi-frequency pulse signals,

frequency selective detector means responsive to the frequency content of the received multi-frequency pulse signals for producing output signals corresponding to the individual frequencies of the multi-frequency pulse signals,

converter means for producing digital signals corresponding to the values of the outputs from said frequency selective detector means,

storage means having a plurality of storage locations for receiving and storing said digital signals,

storage control means responsive to the outputs from said frequency selective detector means for selecting locations in said storage means, said digital signals being coupled to said locations,

storage access means for selectively addressing, via said storage control means, a desired one of said storage locations in said storage means for selectively reading information from, writing information in or erasing information from said desired location and

read-out means for receiving the information from said storage means and producing intelligible indications of the information.

4,366,349

GENERALIZED SIGNAL PROCESSING HEARING AID

Roger A. Adelman, 1562 Wittlou Pl., Cincinnati, Ohio 45224

Filed Apr. 28, 1980, Ser. No. 144,395

Int. Cl.³ H04R *25/00*

U.S. Cl. 179—107 FD **32 Claims**

32. A hearing aid apparatus, comprising:

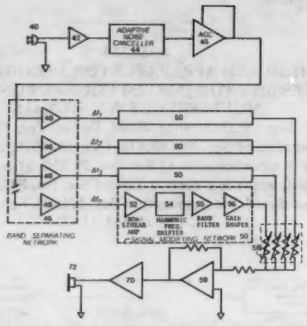
(a) means for receiving a sound pattern and generating a process signal in response thereto;

(b) means for automatically determining a dominant pattern from at least two competing signals and generating a selectively enhanced electrical signal representative thereof;

(c) a splitting network responsive to the selectively enhanced signal for dividing the selectively enhanced signal

into at least two separate signals in accordance to frequency;

(d) means for transposing the frequency of at least one of the separate signals split by said splitting network;



(e) summing means responsive to at least one of said transposed signals and at least one other of said separated signals for generating a combined signal; and

(f) means for converting the combined signal into its acoustic representation.

4,366,350

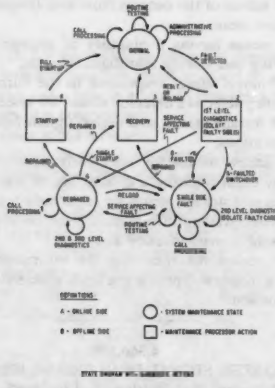
CONTROL SYSTEM FOR TELEPHONE SWITCHING SYSTEM

Ernest O. Lee, Seminole County; Wayne G. Smith, Altamonte Springs, both of Fla., and George C. Hanson, San Antonio, Tex., assignors to Stromberg-Carlson Corporation, Tampa, Fla.

Division of Ser. No. 10,910, Feb. 9, 1979. This application Mar. 10, 1980, Ser. No. 129,101

Int. Cl.[3] H04M *3/24*

U.S. Cl. 179—175.2 C **21 Claims**



1. In a telephony system including a plurality of telephones and interconnecting telephone lines for conveying signals from and to said telephones and call processing means connected to said telephone lines for selectively interconnecting the telephones and respective lines to establish communications between pairs of telephones, and wherein the call processing means includes a port means that connects to each telephone line and selective switching means for interconnecting selected pairs of the port means, the improvement of automatic test call means for testing the operation of the selective switching means, said automatic test call means comprising:

A. selectable test access means in each port circuit means and connected to the corresponding telephone line for coupling signals from and to the telephone lines and for isolating the port means from the telephone lines,

B. test call generating means for generating signals corresponding to telephone line signals during a calling operation,

C. control means connected to said selectable test access means and said test call generating means for selecting a first test access means and a second test access means thereby to establish an input and output path for the signals from said test call generating means, whereby the call processing means processes the telephone test call between the selected port circuit means, and

D. monitoring means connected to said control means and to the call processing means for monitoring the test call through the call processing means.

4,366,351

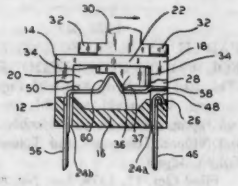
ELECTRICAL SLIDE SWITCH OF FLUSH THROUGH DESIGN AND METHOD OF MOUNTING THEREOF

Albert F. Ditzig, Hoffman Estates, Ill., assignor to RE-AL, Inc., Wheeling, Ill.

Filed Nov. 7, 1980, Ser. No. 205,584

Int. Cl.[3] H01H *15/02*

U.S. Cl. 200—16 R **11 Claims**



1. An electrical slide switch comprising:

a housing having a bottom wall and a pair of spaced side supports extending vertically therefrom;

a first electrical lead mounted in said housing having a contact area located within said housing and a leg portion protruding beneath said housing bottom wall to form a first electrical terminal;

a second electrical lead mounted in said housing having a contact area overlying the contact area of said first electrical lead and a leg portion protruding beneath said housing bottom wall to form a second electrical terminal;

an actuator slidably supported between said housing side supports having a portion thereof protruding into said housing which is engageable with a portion of said second electrical lead for deflecting its contact area against the contact area of said first electrical lead, thereby completing an electrical circuit between said first and second electrical terminals; and

an open area formed in said side supports which communicates with the contact areas of said first and second electrical terminals, said open area permitting the flow of cleaning solvents through the housing and between said contact areas.

4,366,352

TWO-SPEED CONTINUOUS DRIVE TIMER

George Obermann, Niles, Ill., assignor to The Singer Company, Schiller Park, Ill.

Filed Aug. 29, 1980, Ser. No. 182,720

Int. Cl.[3] H01H *7/08*

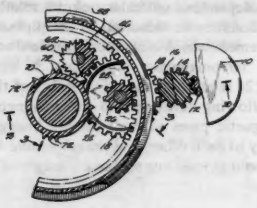
U.S. Cl. 200—35 R **10 Claims**

7. A program timer having a rotatable program member provided with cams actuating switches in sequence, characterized by,

a motor,

a low speed drive connecting the motor to the program member and including an overrunning clutch having an input and an output,

a high speed drive connecting the motor to the program member,



means carried by the program member for engaging and disengaging the high speed drive,

the output of the low speed drive overriding the input of the low speed drive when the high speed drive is engaged.

4,366,353

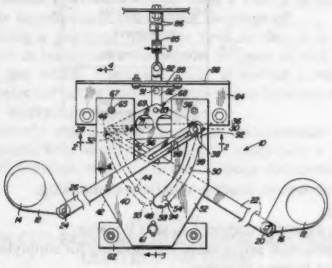
ANTI-PARALLELING APPARATUS FOR HIGH-VOLTAGE GEAR

David M. Evans, Panama City Beach, Fla., assignor to S&C Electric Company, Chicago, Ill.

Filed Feb. 23, 1981, Ser. No. 237,228

Int. Cl.³ H01H *31/00*

U.S. Cl. 200—48 R **12 Claims**



1. A high-voltage switchgear having first and second two-position switches, apparatus for preventing the switches from simultaneously occupying their second positions, which apparatus comprises:

a first driven member;

first means for constraining the first driven member to move along a first curvilinear path between extreme first and second locations;

a first link associated at a first end with the first switch for reciprocation of a second end thereof in a first direction when the first switch moves from its first to its second position and in a second opposite direction when the first switch moves from its second to its first position, the first switch being unable to move if the first link is prevented from moving;

first means for connecting the second end of the first link to the first driven member so that when the first switch moves from its first to its second position, the first link and its second end reciprocate in the first direction to move the first driven member from its first to its second location, and so that when the first switch moves from its second to its first position, the first link and its second end reciprocate in the second direction;

a second driven member;

second means for constraining the second driven member to move along a second curvilinear path between extreme first and second locations;

a second link associated at a first end with the second switch for reciprocation of a second end thereof in a third direction when the second switch moves from its first to its second position and in a fourth opposite direction when the second switch moves from its second to its first position, the second switch being unable to move if the second link is prevented from moving;

second means for connecting the second end of the second link to the second driven member so that when the second switch moves from its first to its second position, the second link and its second end reciprocate in the third direction to move the second driven member from its first to its second location, and so that when the second switch moves from its second to its first position, the second link and its second end reciprocate in the fourth direction; and

yoke means for maintaining the driven members a fixed distance apart so that both driven members can simultaneously occupy their first locations, either driven member can occupy its second location while the other driven member occupies its first location, and either driven member is prevented from moving out of its first location while the other driven member is not in its first location;

whereby both switches can simultaneously occupy their first positions, either switch can move to and occupy its second position while the other switch is in its first position, and neither switch can move out of its first position, despite a momentary or continued attempt to so move, while the other switch is not in its first position.

4,366,354

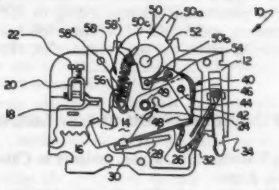
CIRCUIT BREAKER WITH IMPROVED CONTACT PUSH-OFF SPRING

Alexander R. Norden, New York, N.Y., assignor to Federal Pacific Electric Company, Newark, N.J.

Filed Dec. 29, 1980, Ser. No. 220,758

Int. Cl.³ H01H *3/32*

U.S. Cl. 200—154 **10 Claims**



1. A manually operab circuit breaker having an elongated movable contact member supported between its ends on a contact member pivot, said elongated movable contact member having a movable contact at one end, a stationary contact engageable by and disengageable from said movable contact when the circuit breaker is in a closed and open condition, respectively, said movable contact member having an actuator carrier by an actuator pivot at the end of the movable contact member remote from said movable contact and supporting an overcurrent releaseable latch normally restraining said actuator, a toggle including a pivoted handle and a link connected to said handle, said toggle being operable from a collapsed condition into an erect condition for operating said actuator and thereby operating said circuit breaker into the closed condition, a push-off spring biasing said circuit breaker toward said open condition, said push-off spring initially providing a first degree of resistance to closing of the contacts during operation of said circuit breaker to the closed condition, said push-off spring providing a second degree of resistance to closing of the

contacts during operation of said circuit breaker to the closed condition after the initial operation, whereby manual closing of the circuit breaker initially encounters said first degree of resistance and is unimpeded by the second degree of resistance during the initial operation of the toggle toward the erect condition from the collapsed condition and the second degree of resistance is effective to accelerate opening of the contacts upon release of said overcurrent latch.

4,366,355

KEYBOARD

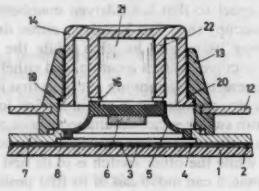
Jürgen Oelsch, Salz, Fed. Rep. of Germany, assignor to Preh Elektrofeinmechanische Werke Jakob Preh Nachf. GmbH & Co., Saale, Fed. Rep. of Germany

Filed Mar. 24, 1981, Ser. No. 247,152

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1980, 3011674

Int. Cl.³ H01H *13/14, 13/70, 5/04*

U.S. Cl. 200—159 B **8 Claims**



1. A keyboard comprising a base plate having conductor paths and contact areas provided thereon, a plurality of keys associated with said contact areas, said keys consisting each of an elastically deformable snap member, the contact element thereof being adapted to be brought into contact with said contact areas by deformation upon actuation of an actuating button and being positioned above said contact areas in spaced relationship thereto,

characterized in that a metal frame (**7, 17**) is provided as mounting support for the snap members (**5, 15**), said metal frame having protrusions (**8**) embossed therefrom in a direction toward the actuating buttons (**14, 24, 25**), the number of protrusions corresponding to the number of snap members, and in that each protrusion has an opening (**9**) therein, in which the snap member (**5, 15**) is held.

4,366,356

COMPACT INDUCED CURRENT HEAT-GENERATING PIPE

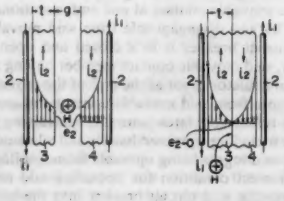
Masao Ando, Yokohamashi, Japan, assignor to Chisso Corporation, Tokyo, Japan

Filed Mar. 17, 1981, Ser. No. 244,689

Claims priority, application Japan, Mar. 18, 1980, 55-34231

Int. Cl.³ H05B *6/44;* F24J *3/04*

U.S. Cl. 219—10.51 **12 Claims**



1. In an induced current heat-generating pipe consisting of (1) insulated wires in rows, the respective ends of these wires on one side being electrically connected to each other and those on the other side being connected to an alternating current electric source, whereby said insulated wires form a primary circuit, and (2) at least one set of rows of electrically conductive ferromagnetic pipes of substantially the same length, the respective wires in said rows being passed through the respective pipes and the respective two ends of the pipes being electrically connected to each other, and in case where a plurality of sets are provided, the respective sets of the pipes forming an independent secondary circuit relative to the primary circuit common to these sets of the pipes,

the improvement which is characterized in that the thickness of said ferromagnetic pipes has a relationship of $0.5s \leqq t < 2s$ relative to the skin depth s of the alternating current flowing through said ferromagnetic pipes; said ferromagnetic pipes in each set are brought into close proximity to each other; and the respective ferromagnetic pipes of said at least one set have a length of 1 Km or less.

4,366,357

HIGH FREQUENCY HEATING APPARATUS

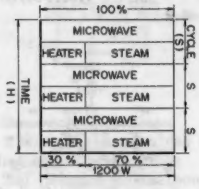
Seiichi Satoh, Fujinomiya, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jan. 8, 1981, Ser. No. 223,302

Claims priority, application Japan, Jan. 21, 1980, 55-5400

Int. Cl.³ H05B *6/68*

U.S. Cl. 219—10.55 B **3 Claims**



1. A microwave heating apparatus comprising:

a housing;

a heating chamber disposed in said housing;

a steam generator provided in said housing for supplying steam into said heating chamber;

a microwave generator provided in said housing for radiating microwave energy into said heating chamber;

a first electric heater disposed at an upper portion in said heating chamber for supplying electric heating energy thereinto;

a second electric heater disposed at a lower portion in said heating chamber for supplying electric heating energy thereinto;

control means provided in said housing for controlling the operations of said steam generator, said microwave generator and said first and second electric heaters in the following four modes (a), (b), (c) and (d) of operation:

(a) a first mode wherein only said microwave generator is continuously operated,

(b) a second mode wherein only said microwave generator is intermittently operated,

(c) a third mode wherein only at least one of said first and second electric heaters are operated, and

(d) a fourth mode wherein said microwave generator is repeatedly operated for intermittent periods of time and both said steam generator and said first heater are repeatedly operated for the remaining periods of time; and

means for selecting one of said four modes of operation.

4,366,358

EDM METHOD AND APPARATUS UTILIZING SUCCESSIVELY DISPLACED MAGNETIC FIELD

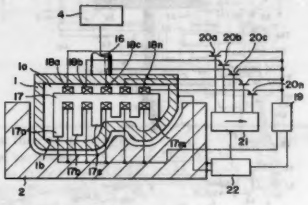
Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Filed May 16, 1980, Ser. No. 150,355

Claims priority, application Japan, Jun. 6, 1979, 54-71638; Jun. 6, 1979, 54-71639; Jun. 6, 1979, 54-71642; Dec. 27, 1979, 54-172588; Jan. 8, 1980, 55-1062; Jan. 16, 1980, 55-3350

Int. Cl.³ B23P 1/08; B23K 9/08

U.S. Cl. 219—69 M 22 Claims



1. In a method of electrical discharge machining wherein a tool electrode is juxtaposed with a workpiece electrode to form a machining gap therebetween in the presence of a machining liquid and a succession of electrical pulses are applied between the tool and workpiece electrodes to produce successive electrical discharges across the machining gap, thereby electroerosively removing material from the workpiece and wherein as material removal proceeds the tool and workpiece electrodes are advanced relatively towards one another in a predetermined feed direction to form a cavity in the workpiece, the improvement comprising the steps of:

producing a localized magnetic field so that it is concentrated at least predominantly on a region of said machining gap which constitutes only a limited portion of a preselected entire area of juxtaposition between said tool and workpiece electrodes; and

successively shifting said region of concentration of said magnetic field to sweep it over said entire area of juxtaposition between said tool and workpiece electrodes.

4,366,359

WIRE CUT ELECTRIC DISCHARGE MACHINING CONTROL METHOD

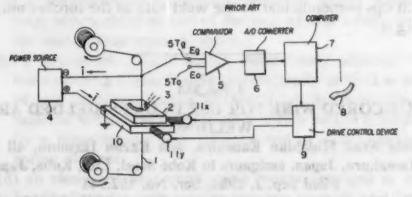
Takeshi Yatomi; Yutaka Tanaka, and Yoshio Ozaki, all of Nagoya, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 15, 1980, Ser. No. 186,842

Claims priority, application Japan, Sep. 27, 1979, 54-124458

Int. Cl.³ B23P 1/08

U.S. Cl. 219—69 M 12 Claims



1. In an electric discharge machining control method where an electric discharge occurs at a minute gap between a wire electrode and a workpiece, having a work power source and a work liquid as a dielectric medium and controlling relative movement between said electrode and said workpiece, the improvement characterized by changing and controlling a machining current so as to control a work groove width to a command value, wherein the desired machining current at a specific point is determined by the thickness of said workpiece and the machining current at the beginning of the machining operation and the thickness of said workpiece at the specific point, the machining operation being controlled so that the actual machining current approaches the desired machining current thereby providing substantially the same work groove width at the beginning of the machining operation as the work groove width at said specific point.

4,366,360

METHOD OF AND APPARATUS FOR DETERMINING RELATIVE POSITION OF A TOOL MEMBER TO A WORKPIECE IN A MACHINE TOOL

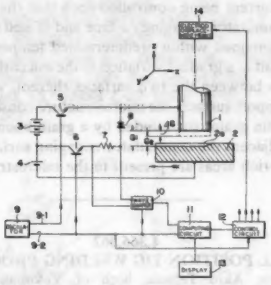
Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Continuation-in-part of Ser. No. 112,460, Jan. 16, 1980, which is a division of Ser. No. 860,164, Dec. 13, 1977, Pat. No. 4,236,057. This application Apr. 14, 1981, Ser. No. 254,094

Claims priority, application Japan, Apr. 21, 1980, 55/52733

Int. Cl.³ B23P 1/08

U.S. Cl. 219—69 M 22 Claims



1. A method of determining relative position of a tool to a workpiece in a machine tool, comprising:

(a) measuring the electrical resistance between said tool member and said workpiece in a given relative position to give a first measurement value;

(b) relatively displacing said tool member and said workpiece by a known distance whereby to establish a shifted relative position between said tool member and said workpiece;

(c) measuring the electrical resistance between said tool member and said workpiece in said shifted relative position to give a second measurement value; and

(d) calculating at least one of said given and shifted relative positions between said tool member and said workpiece from said first and second measurement values and said known distance.

4,366,361

METHOD OF PRODUCING AN ELECTRICAL COMPONENT

Brian R. Allen, Birmingham, England, assignor to Lucas Industries Limited, Birmingham, England

Continuation of Ser. No. 82,157, Oct. 5, 1979, abandoned, which is a continuation of Ser. No. 20,997, Mar. 16, 1979, abandoned, which is a continuation of Ser. No. 783,010, Mar. 30, 1977, abandoned. This application Oct. 5, 1981, Ser. No. 308,817

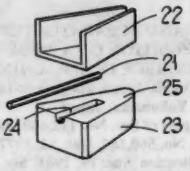
Claims priority, application United Kingdom, Apr. 9, 1976, 14473/76

Int. Cl.³ B23K 11/18

U.S. Cl. 219—78.01 13 Claims

1. A method of producing a brush for a dynamo electric

machine comprising the steps of: providing a powder mixture consisting essentially of copper, tin, lead, carbon and a hard phase, compacting said powder mixture under a predetermined applied load to form a powder compact defining a brush body of predetermined thickness between a mounting surface and an opposite commutator engaging surface, providing a conductive support member, positioning said conductive support member in electrical contact with said mounting surface of said powder compact, urging a pair of electrodes against said support member and said powder compact, and passing an electrical current through said electrodes and hence through said



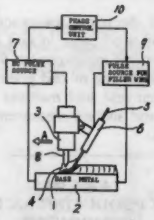
support member and said powder compact for sintering sad compact and for electrically connecting said conductive member to said compact, the magnitude and time duration of said electrical current being controlled such that the temperatures of said commutator engaging surface and of said support member are maintained within predetermined temperature ranges, so as to result in a gradual variation in the microstructure of the brush body between the two surfaces thereof, whereby adjacent the support surface, the microstructure consists essentially of copper/tin grains surrounded by a grain boundary layer of lead and adjacent the commutator engaging surface, heterogeneous lead-rich areas are present in the microstructure.

4,366,362

ALL POSITION TIG WELDING PROCESS

Ichiro Ohta; Akio Tejima, both of Yokohama; Masayuki Watando, Yokosuka; Akira Yamaoka, Chigasaki; Kouzi Ishiwata, Yokosuka, and Minoru Yamada, Yokohama, all of Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 3, 1981, Ser. No. 231,141
Claims priority, application Japan, Mar. 18, 1980, 55-34396
Int. Cl.³ B23K 9/09
U.S. Cl. 219—123 **5 Claims**



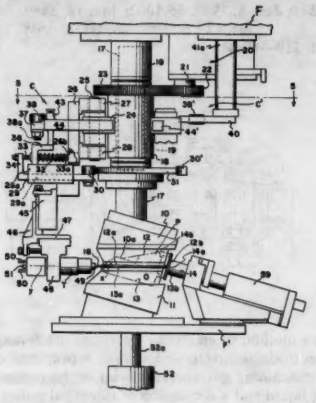
1. An all position TIG welding process which comprises during completion of a weld feeding DC current pulses of selected frequency to an electrode, feeding current pulses of the same frequency and of changing polarity to a filler wire and controlling the phase relationship between the electrode and filler wire pulses in a predetermined manner throughout formation of the weld to produce a controlled magnetic field whereby to cause the produced arc to swing under the influence of the field in predetermined amplitude and direction for each pass required to produce the weld.

4,366,363

WORKPIECE TRACING ARC WELDING SYSTEM

George S. Wilson, 3349 S. Point Au Gres Rd., Au Gres, Mich. 48703

Filed Dec. 3, 1979, Ser. No. 99,466
Int. Cl.³ B23K 9/02
U.S. Cl. 219—125.11 **12 Claims**



1. In an arc welding system for joining portions of a symmetric product around the irregularly contoured, facially opposed, perimetral, marginal boundaries thereof; workpiece holding means on said frame means for holding the facially abutting separate sections in a joined fixed position in which their surfaces of abutment define a weld path in a weld plane; a pair of arc welding torches having axially extending arc generating tips supported with their axes in said plane directed at the abutment surfaces; a separate carriage for each torch supporting each torch for welding travel simultaneously along a different contoured length of the perimetral marginal boundary; a rotary shaft on which each carriage mounts for partial orbiting movement in a circular path; the carriages being in straddling position relative to the product, substantially oppositely mounted on the shaft; drive means for driving the shaft; a sub-carrier on each carriage; means mounting each sub-carrier for pivotal movement about an axis parallel to the shaft; a slide carried by each sub-carrier and mounted for radial travel thereon; a torch being mounted on each slide; a fixed cam about which said carriages orbit radially inward of said slides; means for urging said slides to maintain engagement with said fixed cam so as to be guided in radial travel thereby and maintain the tips at a constant distance from the weld path; cam follower surfaces on said sub-carrier; and fixed cam tracks engaged by said cam follower surfaces upon orbiting of said carriages to cause said sub-carriers to pivot and maintain the torch tips perpendicular to the weld path as the torches move along it.

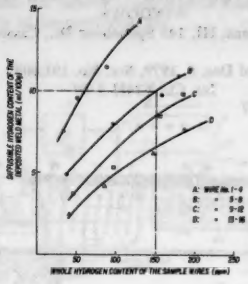
4,366,364

FLUX-CORED WIRE FOR USE IN GAS-SHIELDED ARC WELDING

Toshio Arai; Hidehiko Kanehira, and Kazuo Ikemoto, all of Kamakura, Japan, assignors to Kobe Steel, Ltd., Kobe, Japan

Filed Sep. 2, 1980, Ser. No. 182,941
Claims priority, application Japan, Sep. 4, 1979, 54-113840
Int. Cl.³ B23K 35/22
U.S. Cl. 219—146.24 **3 Claims**

1. A flux-cored wire for gas shielded arc welding comprising a flux of the following composition filled as a core within a metallic casing:



Metal fluoride as fluorine	0.025–0.35 (wt %)
Metal carbonate	≦0.5
One or more selected from the group consisting of Al, Ti, Zr, V and Ca	≦0.75
TiO_2	3.5–7.4
SiO_2	≦2.0
MgO and/or ZrO_2	0.03–1.2
Al_2O_3	≦1.5
C	≦0.15
Mn	1.2–3.0
Si	0.3–1.2

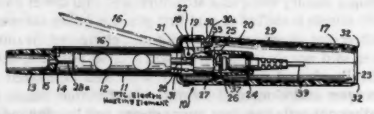
wherein the whole hydrogen content of said wire is defined as 15 ppm≦H≦(139+400F) ppm where F is the weight % of fluorine with regard to the entire wire.

4,366,365

TELESCOPING ELECTRIC HAIR CURLING IRON WITH AN INTEGRALLY MOLDED HAIR CLIP ACTUATOR

Raymond W. Kunz, Monroe, and Henry J. Walter, Wilton, both of Conn., assignors to Clairol Incorporated, New York, N.Y.

Filed Jun. 4, 1979, Ser. No. 45,147
Int. Cl.[3] **A45D** *1/04;* **H01R** *11/00, 39/00*
U.S. Cl. 219—225 **8 Claims**



1. A telescoping electric hair curling iron comprising:

(a) a molded hollow handle of plastic material having a front opening;

(b) a longitudinally extending cantilever spring element integrally molded as part of the wall of said handle from the same plastic material thereof;

(c) a depressible thumb button immediately adjacent the front opening of said handle and integrally molded as part of said cantilever spring element from the same plastic material wherein said depressible thumb button is formed by a downwardly bent forward end of said cantilever spring element;

(d) an elongated heat conducting means arranged in said handle for telescopic axial movement through said front opening therein between a first position projecting from the front of said handle and a second position substantially enclosed within said handle;

(e) an electric heat generating element for heating said heat conducting means and fixed within said heat conducting means so as to be telescopically movable therewith relative to said handle;

(f) an elongated hair gripping means coextensive with and mounted on said heat conducting means for movement toward and away from the surface thereof and axially movable therewith to said first and second positions, a portion of said hair gripping means parallel with the longitudinal axis of said heat conducting means and extending beyond the end thereof cooperating with said thumb button when said heat conducting means is in said first position whereby depression of said thumb button causes said hair gripping means to move toward and away from said conducting means to permit gripping and releasing of hair to be curled;

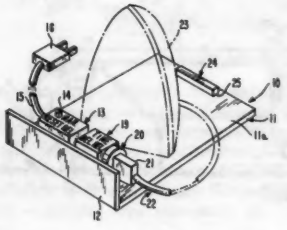
(g) an electric swivel cord connector means mounted on the inner end of the heat conducting means within the handle so as to be moveable with said heat generating element by sliding forward into said handle when said heat conducting means is moved to said first position and sliding backwards out of a rear opening in said handle when said heat conducting means is moved to said second position, said swivel cord connector means being adapted to connect to an external electrical source for conveying electricity to said heat generating element.

4,366,366

ELECTRIC IRON STAND WITH TIME DELAY SAFETY SWITCH ARRANGEMENT

Carl A. Ekblad, 4023 Heath Rd., Jacksonville, Fla. 32211

Filed Sep. 5, 1980, Ser. No. 184,204
Int. Cl.[3] **H05B** *1/02;* **D06F** *79/02*
U.S. Cl. 219—247 **3 Claims**



1. An automatic iron safety switch device and support stand, comprising, in combination, a platform of insulating material for supporting an electric iron, a normally open switch secured in said platform and arranged to be closed by the weight of an electric iron placed on said platform, a manually resettable relay secured to the surface of said platform, an outlet socket on the surface of said platform into which the cord of an iron can be plugged for energization, said manually resettable relay including a switch device having a first position connecting said outlet socket to a power supply source and a second position disconnecting the outlet socket from the power source, said manually resettable relay further including an operating coil arranged to move the switch device from the first position to the second position when the coil is energized, a manually resettable latch means for holding the switch device in the second position when moved thereto until manually reset and a manual reset button for returning the switch device to its first position, a standard time-delay relay mounted on the surface of said platform, said time-delay relay including an electrically operated timing means and a normally open switch means, said timing means arranged to automatically close said normally open switch means after the lapse of a predetermined time period, said electrically operated timing means being connected to said power source for energization through said platform switch and said switch device in said first position thereof, whereby the timing means will be operative only

when an iron is positioned on said platform switch and the switch device of said manually resettable relay is in its first position, the normally open switch means of said time-delay relay being connected to the operating coil of said resettable relay and arranged to energize the operating coil when closed after the lapse of said predetermined time period by said timing means to move the switch device of said manually resettable relay to its second position, thereby deenergizing the outlet socket and timing means and latching the switch device in its second position, said time delay relay being so constructed that should the iron be removed from said platform before the lapse of said predetermined time period to open the platform switch, the timing means will be deenergized and the time-delay relay reset, and movement of said switch device to its second position likewise deenergizing said timing means and resetting said time-delay relay.

4,366,367

ELECTRIC FABRIC STEAMING APPLIANCE WITH PREVENTION OF WATER REFILL THROUGH THE STEAM DISCHARGE OUTLET

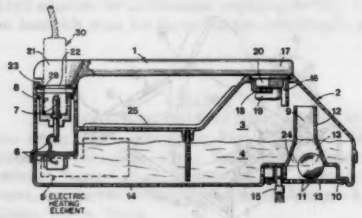
Daniel Mazzucco, Annemasse, France, assignor to Terson Terraillon, Annemasse and Marc Terraillon, Gaillard, both of, France

Filed Nov. 15, 1979, Ser. No. 94,659

Claims priority, application Switzerland, Dec. 21, 1978, 13029/78

Int. Cl.³ H05B 3/00; D06F 75/16

U.S. Cl. 219—272 **5 Claims**



1. In an appliance for removing creases from fabrics of the type having a body forming a water tank adapted to be partially filled with water and equipped with a handle for manipulating the housing during use to positions including a working position and an upside down position, a vapor outlet from the tank and an opening for filling the tank with water, electrical means on said body for heating and vaporizing contained water in the tank, a surface of said housing defining a plate having vapor outlet orifices communicating with said outlet for conducting the vapor thus produced onto the fabric from which the creases are to be removed when the plate is slid over the fabric with the housing in its working position, the improvement comprising an open-ended duct defining said vapor outlet, said duct extending upwardly from said plate and having an upper end communicating with a steam space above the level of the water in the tank when the appliance is in its working position and a lower end communicating with said orifices in said plate, a valve seat in the said duct and valve means positioned between the plate and the seat, said valve means being free to move in the duct under the force of gravity, whereby when the appliance is in its working position the valve means is spaced from the seat allowing steam to pass through the duct to said orifices and when the appliance is upside down the valve means engages the seat to prevent fluid flow in the duct in a direction from the plate toward the steam space.

4,366,368

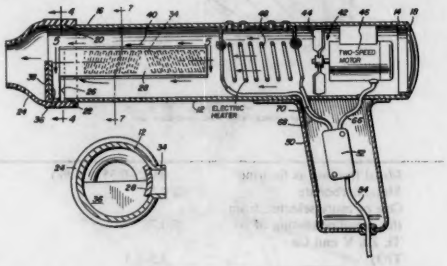
ELECTRIC HEATER-BLOWER APPARATUS FOR REMOVING FROST AND SNOW FROM VEHICLE WINDOWS

William S. Stephens, III, 143 Spoonhour Dr., Casselberry, Fla. 32707

Filed Dec. 6, 1979, Ser. No. 101,008

Int. Cl.³ F24H 3/04

U.S. Cl. 219—367 **11 Claims**



1. A frost and snow remover including an elongated portable hollow housing having first and second ends, said first end including an end outlet for air pumped through said housing and said second end including an inlet for the entrance of air into said housing, electrically actuated air pump means in said housing for pumping air therethrough from said second end to said first end, electrical resistance heating means in said housing downstream from said air pump means for heating air being pumped through said housing, said housing including an elongated lateral outlet formed in one longitudinal wall portion thereof spaced between said heating means and said outlet and opening laterally outwardly of said one housing wall portion, an outlet nozzle communicating with said end air outlet shiftably support on said first end of said housing for movement between first and second positions and including a cover panel coextensive in size with said elongated air outlet mounted within said housing for shifting relative thereto with said nozzle, said nozzle and housing including coacting portions operative to open and close said first end outlet responsive to shifting of said nozzle to said first and second positions, respectively, said cover panel, nozzle and coacting portion of said nozzle comprising a unitary one-piece structure, and said cover panel, when said nozzle is shifted to said first position being automatically shifted into closing registry with said elongated air outlet and, when said nozzle is shifted to said second position, being automatically shifted out of registry with said elongated air outlet to open said elongated air outlet, and circuit means for electrically connecting said air pump means and heating means with a source of electrical potential.

4,366,369

APPARATUS FOR HEATING SHEET-LIKE THERMOPLASTIC PRESHAPES

Karl Hagen, Friedelsheim; Karl H. Scholl, Lambsheim, and Gerhard Schmelzer, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Feb. 20, 1981, Ser. No. 236,498

Claims priority, application Fed. Rep. of Germany, Mar. 1, 1980, 3007999

Int. Cl.³ F27B 9/06

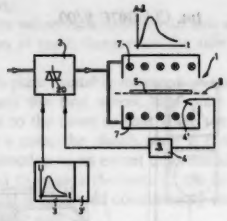
U.S. Cl. 219—388 **4 Claims**

1. An arrangement for heating sheet-like preshapes consisting of a thermoplastic, especially of a fiber-reinforced thermoplastic, said arrangement comprising

an infra-red heating apparatus equipped with bright infra-red radiators,

a conveyor belt feeding the preshapes to said apparatus,

an electronic control unit provided with a microprocessor, said control unit generating a periodically increasing and decreasing electrical signal voltage, whose time-curve and amplitude are variable in accordance with the heat uptake capacity of the preshapes, and



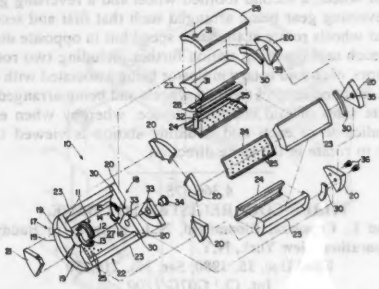
a feed unit controlled by the signal voltage, said feed unit having phase-controlled rectifier means for in turn metering to the heating apparatus, a periodic electrical current which in its time-curve and amplitude corresponds to the preprogrammed signal voltage.

4,366,370

MOTOR/GENERATOR ARMATURE PORTABLE BAKING OVEN

James L. Moore, 6416 The Parkway, Alexandria, Va. 22310

Filed Feb. 12, 1980, Ser. No. 120,820
Int. Cl.³ H05B *3/58*
U.S. Cl. 219—535 **1 Claim**



1. A portable oven for surrounding an object mounted on a shaft, such as the armature of a motor, for the purpose of baking the object without removing it from the shaft, said oven comprising:

a container comprising:

front and rear end members formed from a plurality of wedge-shaped sections which are removably fitted together, said end members being adapted to be removably mounted on a shaft, and

a body member formed from a plurality of composite sections removably fitted together for location between and supported by said end members so that the container mounts on and is supported by said shaft to contain said object,

each body section comprising an inner baffle segment formed with holes therethrough for circulation of air, a body segment adapted to be fitted to said baffle segment with a space therebetween and an insulation segment adapted to cover the surface area of said body segment thereby to minimize escape of heat therethrough,

means in said container for heating the object within the interior of said container;

air inlet means connecting the inside of said container with the outside atmosphere; and

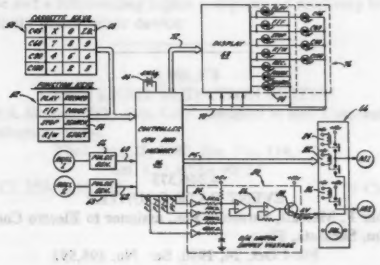
air outlet means extending through the three segments of at least one said body section and connecting the inside of said container with the outside atmosphere, said air outlet means being adapted for coupling to air exhaust means.

4,366,371

METHOD AND APPARATUS FOR CONTROLLING TAPE TRANSPORT APPARATUS FOR CASSETTES

Stephane M. d'Alayer de Costemore d'Arc, and David J. Lockey, both of 19-21 Rue des Ateliers, B-1080 Brussels, Belgium

Filed Oct. 20, 1978, Ser. No. 953,211
Claims priority, application France, Dec. 9, 1977, 77 37210
Int. Cl.³ B65H *59/38, 77/00*; H02P *5/46, 7/68*
U.S. Cl. 235—92 MP **5 Claims**



1. In a tape transport apparatus for tape/reel assemblies having two reels carrying tape, drive means for moving the tape from reel to reel, reel speed detectors including means generating reel pulses at rates proportional respectively to the speed of each reel, and controller means connected to said reel speed detectors and employing the ratio between the speeds of the reels for monitoring tape movement, the combination comprising:

means for counting reel pulses for each reel,

means timing and producing output signals respectively representing the elapsed periods of the same total count of reel pulses for each reel, and

means determining and producing signals representing the ratio between the respective output signals from said timing means to represent the ratio between the speeds of the reels employed by said controller means for monitoring tape movement.

4,366,372

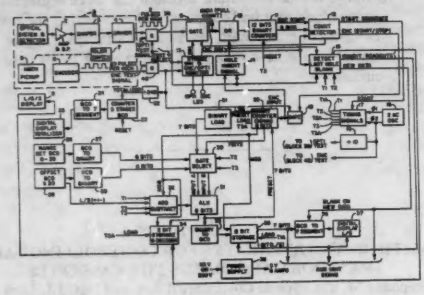
APPARATUS AND METHOD FOR COUNTING REPETITIVE MARKS ON A RUNNING WEB

Jack Sargent, Silver Spring, Md., assignor to Innovative Design, Inc., Silver Spring, Md.

Division of Ser. No. 44,384, Jun. 1, 1979, Pat. No. 4,317,989.
This application Aug. 22, 1980, Ser. No. 180,360
Int. Cl.³ G06M *9/00*
U.S. Cl. 235—92 PL **6 Claims**

1. In apparatus for counting repetitive marks on a running

web, means for sensing each mark and producing a corresponding pulse to be counted, and means for determining when



such a pulse should have been produced and in the absence of such a pulse generating a pulse to be counted.

4,366,373

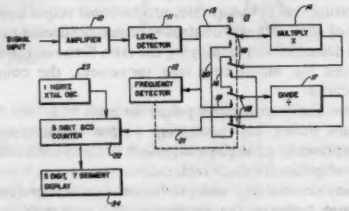
EVENT RATE COUNTER

Wilbur F. Metcalf, Sarasota, Fla., assignor to Electro Corporation, Sarasota, Fla.

Filed Oct. 14, 1980, Ser. No. 196,592

Int. Cl.³ G01P *3/48*

U.S. Cl. 235—92 DM **17 Claims**



1. In an event rate counter for measuring the number of events occurring per unit of time with an input pulse train having a fixed number of pulses per each occurrence of said event and having a frequency related to the frequency of occurrence of said event, said pulse train scaled by a multiplier means and a divider means for providing a direct readout in events-per-unit of time, an improved automatic switching means for determining the sequential order in which the pulse train is applied to the multiplier means and the divider means comprising:

frequency detector means for determining whether the frequency of the input pulse train is greater than or less than a reference frequency; and

switching means for routing said pulse train to the multiplier means if the input pulse train frequency is less than the reference frequency and routing said pulse train to the divider means if the input pulse train frequency is greater than the reference frequency.

4,366,374

LAP COUNTER FOR RADIO CONTROLLED VEHICLES

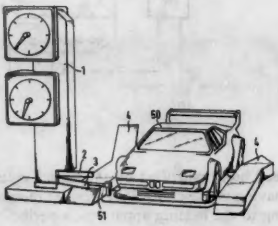
Hermann Neuhierl, Waldstrasse 36, D-8510 Fürth/Bayern, Fed. Rep. of Germany

Filed Jan. 27, 1981, Ser. No. 229,011

Claims priority, application Fed. Rep. of Germany, Jan. 30, 1980, 3003212

Int. Cl.³ G07C *9/00*

U.S. Cl. 235—93 **5 Claims**



1. A lap counter for radio controlled vehicles, comprising two spaced edge members defining a convergent track, at least one counting device situated adjacent at least one of said edge members, each said counting device including at least two counting stations, each said counting station having an indicator adapted to indicate the number of laps run by a vehicle and an actuator member operatively coupled to said indicator, each said actuator member extending transversely to said convergent track and adapted to be contacted by a trigger member carried by a vehicle, each said counting station including a first toothed wheel, a second toothed wheel and a reversing gear, said reversing gear being arranged such that first and second toothed wheels rotate at the same speed but in opposite directions, each said counting station further including two rotary indicators, each said rotary indicator being associated with one of said first and second toothed wheels and being arranged on opposite sides of said counting device, whereby when each said indicator of each said counting station is viewed they appear to rotate in the same direction.

4,366,375

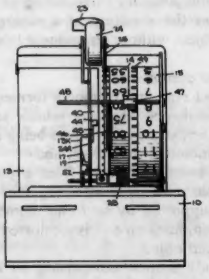
THREE-COIN REGISTER TOY BANK

Dorland L. Crosman, Bloomfield, N.J., assignor to Buddy L Corporation, New York, N.Y.

Filed Dec. 15, 1980, Ser. No. 216,250

Int. Cl.³ G07G *1/00*

U.S. Cl. 235—100 **9 Claims**



1. A coin bank register bank adapted to accept and totalize coins of different size, said bank comprising:

A. a cash box whose top wall is provided with an entry port;

B. a hollow drum mounted for rotation above the box on an

axle parallel to the top wall thereof, said drum having a coin receiver therein and being provided with a manually-operated pull-down lever for turning the drum from a normal angular position in which a coin may be deposited in the receiver, to an extreme angular position in which the receiver is aligned with the port to drop the coin in the cash box;

C. a register wheel mounted on said axle and having a circular series of teeth thereon on the side thereof facing the drum;

D. a clutch plate rotatably mounted on said axle between the drum and the first wheel, said plate being operatively coupled to the drum so that when the drum is turned to deposit a coin, the clutch plate is caused to turn in the same direction to an extent determined by the size of the coin and to engage the teeth of the first wheel, whereby the wheel is advanced concurrently therewith to indicate the deposit; and

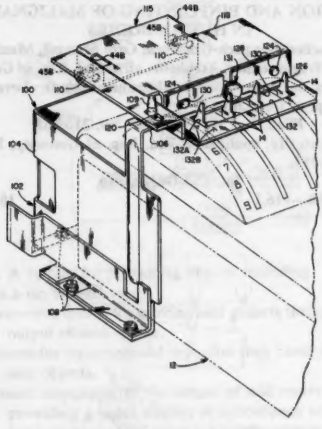
E. an interlock mechanism triggered by the drum only when it is turned to its extreme position, the mechanism having a normally-retracted nose which, when the mechanism is triggered, is projected to engage said teeth and detent said first wheel to prevent any further advance thereof.

4,366,376

APPARATUS FOR INTERCONNECTING AN ACTUATOR AND A POSTAGE METER

David B. Albright, Stratford; Keith E. Schubert, West Norwalk, and Philip Pollak, Jr., Westport, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Jul. 11, 1980, Ser. No. 167,517
Int. Cl.³ G07G 1/00; B23Q 17/00
U.S. Cl. 235—101 **5 Claims**



1. Apparatus for interconnecting a postage meter and means for operating the postage meter, wherein said postage meter includes a lever which is positionable in a plurality of postage value selecting positions, said meter operating means includes a support, and said meter operating means includes means removably attachable to said support for positioning said postage meter lever, said apparatus comprising:

a. means for adjusting the spatial relationship between said postage meter and said meter operating means, and

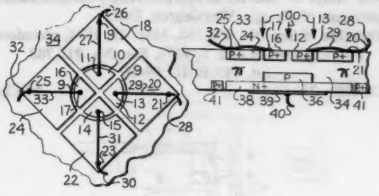
b. means for fixing the spatial relationship between said postage meter lever and said lever positioning means, said fixing means including lever extension means fixedly attachable to said postage meter lever, and said lever extension means including rotatable means locatable in a predetermined position with respect to said adjusting means.

4,366,377

DUAL SENSITIVITY OPTICAL SENSOR

Johannes K. Notthoff, Lomita, and Rainer Zuleeg, San Juan Capistrano, both of Calif., assignors to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Sep. 29, 1980, Ser. No. 191,364
Int. Cl.³ H01J 40/14
U.S. Cl. 250—211 J **14 Claims**



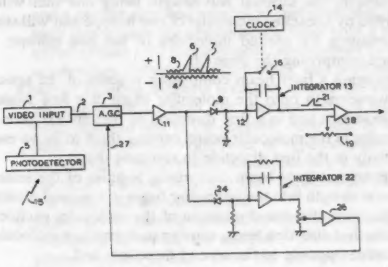
1. An integrated dual sensitivity photodetector implemented in a semiconductor material substrate comprising a central region comprising a relatively high sensitivity photodetector device and a surrounding region comprising a relatively lower sensitivity photodector device.

4,366,378

LASER LIGHT DETECTION SYSTEM

Brent S. Simons, Palo Alto, Calif., assignor to Itek Corporation, Lexington, Mass.

Filed Jan. 23, 1980, Ser. No. 114,771
Int. Cl.³ H01J 40/14
U.S. Cl. 250—214 AG **9 Claims**



1. Adaptive gain integrator circuit comprising:

a. input means (1) for producing signal impulses of a given polarity, intermixed with noise impulses;

b. automatic gain control means (3) having an output circuit, a control circuit, and an input circuit coupled to said input means;

c. first integration means (13) coupled to the output circuit of said automatic gain control means for integrating both said signal impulses and said noise impulses during a given period;

d. second integration means (22) coupled to the output circuit of said automatic gain control means for integrating said noise impulses but not said signal impulses during a given period;

e. comparator means (18) having an input circuit coupled to the output circuit of said first integration means for producing an output signal should the output of said first integration means exceed a pre-determined threshold level; and

f. feedback means (26, 27) coupled to the output circuit of said second integration means for feeding a signal to said control circuit of said automatic gain control means pro-

portional to the magnitude of the output signal of said second integration means, for maintaining the amplitudes of the noise impulses applied to said first integration means substantially constant.

4,366,379

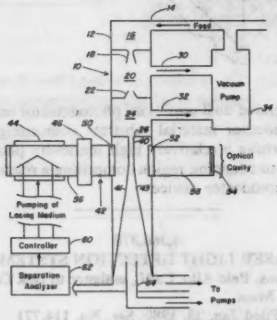
ISOTOPE SEPARATION APPARATUS AND METHOD

Theodore P. Cotter, Los Alamos, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Continuation of Ser. No. 452,764, Mar. 19, 1974, abandoned. This application Jun. 5, 1978, Ser. No. 912,783

Int. Cl.³ B01D *59/00*

U.S. Cl. 250—251 **14 Claims**



1. A method for inducing separation between two isotopes in a molecular beam using a laser emitting a beam of a selected wavelength, the selected wavelength being one that will be absorbed by unexcited molecules of one isotope and will stimulate emission by excited molecules of the one isotope, the method comprising the steps of:

impinging a laser beam comprising π-pulse of the selected wavelength onto the molecular beam at a first angle of incidence and in a first direction to thereby excite molecules in the molecular beam, causing them to move essentially in the first direction in response thereto;

impinging a laser beam comprising π-pulse of the selected wavelength into the molecular beam in a second direction to cause stimulated emission of the molecules excited by the first direction beam, causing such emitting molecule to move opposite to the second direction; and

collecting the molecules so moved by the excitation and stimulation.

4,366,380

METHOD AND APPARATUS FOR STRUCTURAL ANALYSIS

George Mirkin, 5514 Yarwell, Houston, Tex. 77096

Continuation-in-part of Ser. No. 83,783, Oct. 11, 1979, abandoned. This application Mar. 12, 1981, Ser. No. 243,064

Int. Cl.³ G01N *23/00*

U.S. Cl. 250—306 **21 Claims**

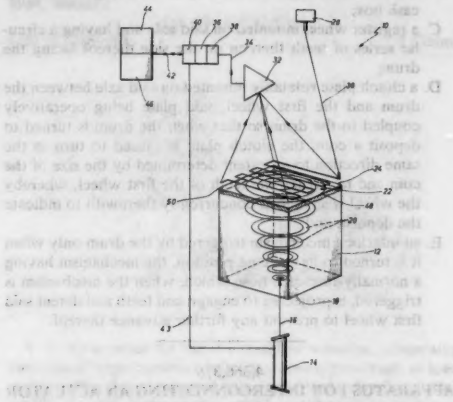
1. A method for the non-destructive structural analysis of a solid object, the method comprising:

applying a wave-generating laser beam pulse at a selected frequency to an input surface of the object to generate an elastic wave pattern in the object;

scanning the generated wave pattern over an output surface of the object with an electron beam scanning device in an evacuated chamber at a frequency which is a multiple of the wave-generating pulse frequency, to provide an output signal;

controlling operation of the scanning device in relation to the wave-generating pulse and processing the output signal to generate a representative signal representative of the wave pattern at a preselected time instant;

generaing a composite signal from the representative signal and from a reference signal related to the wave-generating pulse; and



processing the composite signal to provide reconstruction means for the reconstruction of a representation of the object.

4,366,381

ELECTROTHERMOGRAPHIC APPARATUS FOR DETECTION AND PINPOINTING OF MALIGNANCIES IN HUMAN BODIES

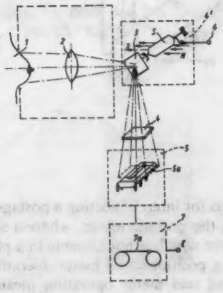
Günter Fischer, Bergisch-Gladbach; Otto Stemme, Munich, and Eduard Wagensonner, Aschheim, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 15, 1980, Ser. No. 216,361

Claims priority, application Fed. Rep. of Germany, Dec. 14, 1979, 2950317

Int. Cl.³ G03C *5/16*

U.S. Cl. 250—316.1 **18 Claims**



1. An electrothermographic apparatus for detecting and pinpointing abnormalities in humans, especially cancerous growths in the mamma, comprising:

(a) detector means including a row of pyroelectric detector elements, said detector means further including a self-scanning circuit and a shift register arrangement;

(b) transmitting means for line-by-line transmission of a thermal image of a region under examination to said row of detector elements, said detector means being operative

to cause the generation of signals which correspond to different points of the thermal image and have intensities denoting the temperatures of the respective points;

(c) storing means for storing the signals from said detector means;

(d) evaluating means for evaluation of the stored signals according to intensity; and

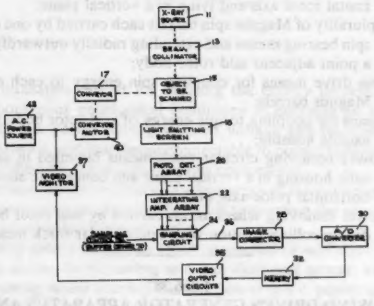
(e) displaying means for displaying the evaluated signals in different colors each of which is indicative of a given range of intensities.

4,366,382

X-RAY LINE SCAN SYSTEM FOR USE IN BAGGAGE INSPECTION

Andreas F. Kotowski, Covina, Calif., assignor to Scanray Corporation, Harbor City, Calif.

Filed Sep. 9, 1980, Ser. No. 185,561
Int. Cl.³ G01N *23/00*
U.S. Cl. 378—57 **8 Claims**



1. A system for inspecting objects including

an x-ray source,

conveyor means for moving said objects through rays in the output of said source,

means for receiving said rays after they have passed through said objects,

means responsive to the output of said receiving means for providing a video display in accordance with the receiving means output comprising a light-emitting screen in the form of a strip, an array of photo-detectors opposite said screen for generating electrical signals in accordance with the light emission of the portions of the screen thereopposite, separate means for individually integrating the output of each of said detectors, electronic sampling circuit means for time multiplexing the outputs of said integrating means to provide a series of sequential pulses representing the outputs of said integrating means, means responsive to said pulses for generating video output signals, and video monitor means responsive to said video output signals for displaying said video output signals, and

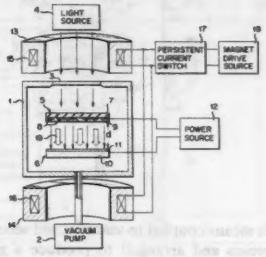
means for collimating the rays of said source into a narrow fan-shaped beam prior to their passage through the objects, said beam scanning said objects in successive slices as the conveyor means moves the objects therethrough.

4,366,383

ELECTRON BEAM TYPE PATTERN TRANSFER APPARATUS

Shunichi Sano, Zama; Toshiaki Shinozaki, Yokohama, and Ichiro Mori, Kodaira, all of Japan, assignors to VLSI Technology Research Association, Japan

Filed Jul. 3, 1980, Ser. No. 165,618
Claims priority, application Japan, Jul. 6, 1979, 54-85563
Int. Cl.³ A61K *27/02*; G01N *21/64*
U.S. Cl. 250—492.3 **2 Claims**



1. An electron beam type pattern transfer apparatus comprising:

a light source;

a vacuum container made of non-magnetic material and having a window through which an ultraviolet ray passes;

a photoelectric mask supported in the vacuum container and adapted to receive the ultraviolet ray from said light source and emit photoelectrons corresponding to a predetermined transfer pattern;

a power source connected between said photoelectric mask and a sample disposed parallel to said photoelectric mask such that it faces the photoelectric mask with a predetermined distance left therebetween, and adapted to apply an acceleration voltage for accelerating said photoelectrons;

a pair of focusing magnets arranged around the axis of the vacuum container such that they are located one at one outer side and one at the opposite outer side of said vacuum container and comprised of superconductive coils, respectively, for creating simultaneously a uniform and stabilized vertical magnetic field between the photoelectric mask and the sample; and

a magnet drive source connected to the focusing magnets for excitation, in which the sample is illuminated with the photoelectrons emitted from the photoelectric mask so that a resist image corresponding to the transfer pattern is formed on the sample; and

a persistent current switch connected in parallel between the superconductive coil of the focusing magnet and the magnet drive source to switch the superconductive coil to a persistent current mode for minimizing the ripple of the magnetic field.

4,366,384

AIR BUBBLE DETECTOR

Lynn E. Jensen, Clearfield, Utah, assignor to Cutter Laboratories, Inc., Berkeley, Calif.

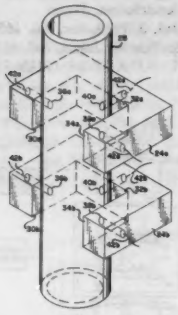
Filed Jun. 18, 1980, Ser. No. 160,664
Int. Cl.³ G01N *15/06*
U.S. Cl. 250—575 **10 Claims**

1. An air detector for use in conjunction with a generally transparent intravenous fluid conduit, the inner wall of said conduit being reflective to light, comprising:

(a) a light source positioned alongside said conduit;

(b) first light-detecting means positioned alongside said conduit at a location diametrically opposite and facing said light source, and adapted for receiving direct light passing through the fluid in said conduit;

(c) second light-detecting means positioned alongside said conduit between said light source and said first light-detecting means, and adapted for receiving reflections from said inner wall of the conduit; and



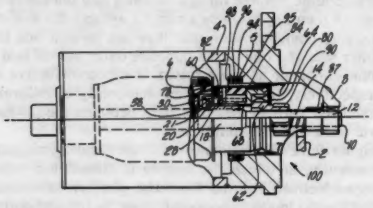
(d) logic means coupled to said first and second light-detecting means and arranged to produce a particular signal when, and only when, the light levels detected separately and simultaneously by said first and second light-detecting means bear a predetermined logical relationship to one another.

4,366,385

ENGINE STARTER DRIVE

James O. Williams, Horseheads, N.Y., assignor to Facet Enterprises, Inc., Tulsa, Okla.

Filed Oct. 22, 1980, Ser. No. 199,410
Int. Cl.³ F02N *11/00*
U.S. Cl. 290—38 R **20 Claims**



1. A starter drive for starting internal combustion engines having a starter housing, a motor driven shaft with a cylindrical end portion and advancing means between said cylindrical end portion and the motor, said starter drive comprising:

screw sleeve means for cooperatively engaging said advancing means on said motor driven shaft;

ring armature means centrally disposed relative to said screw sleeve means and connected to said screw sleeve means;

a drive pinion coaxially disposed on said cylindrical end portion of said motor driven shaft;

unidirectional clutch means interconnecting said screw sleeve means, said ring armature means and said drive pinion; and

means for engaging said ring armature means to said starter housing when said drive pinion is advanced axially along said motor driven shaft by the rotation of said motor when said motor is activated so as to engage a engine ring gear such that said drive pinion is held in mesh with said engine ring gear and the total motor torque is transmitted to said engine ring gear until the motor is deactivated.

4,366,386

MAGNUS AIR TURBINE SYSTEM

Thomas F. Hanson, 24204 Heritage La., Newhall, Calif. 91321

Filed May 11, 1981, Ser. No. 262,136
Int. Cl.³ F03B *5/00*; F03D *7/06*; H02P *9/04*
U.S. Cl. 290—44 **13 Claims**

1. Magnus wind turbine comprising;

fixed support means having azimuthal pivot carrying means;

azimuthally pivotable nacelle housing mounted upon said pivot carrying means and having central bearing means with a horizontal rotor axis;

rotor body carried by said nacelle housing and said central bearing means for rotation about said horizontal rotor axis and having a polar symmetric arrangement of spin bearing means disposed with radial axes stemming from said horizontal rotor axis and lying in a vertical plane;

a plurality of Magnus spin barrels each carried by one of said spin bearing means and extending radially outwardly from a point adjacent said rotor body;

spin drive means for coupling spin energy to each of said Magnus barrels;

means for coupling torque energy of said rotor body to said nacelle housing;

power removing circular track means mounted in said nacelle housing in a vertical plane and concentric about said horizontal rotor axis; and

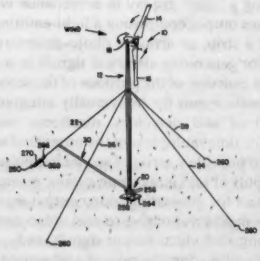
power removing wheel means carried by said rotor body in driven rolling relation with said circular track means.

4,366,387

WIND-DRIVEN GENERATOR APPARATUS AND METHOD OF MAKING BLADE SUPPORTS THEREFOR

J. Warne Carter, Jr., Burkburnett, and J. Warne Carter, Sr., Wichita Falls, both of Tex., assignors to Carter Wind Power, Wichita Falls, Tex.

Filed May 10, 1979, Ser. No. 37,774
Int. Cl.³ F01D *5/14*; F03D *7/04*; H02J *3/08*
U.S. Cl. 290—55 **39 Claims**



1. In wind-driven generator apparatus, a rotor blade comprising an inboard portion and an outboard portion, the blade

being shaped so that at rest the inboard portion has a substantial average pitch and the outboard portion has less average pitch than the inboard portion, the outboard portion being a substantially constant-chord portion and the inboard portion having a chord that increases as the root of the blade is approached.

4,366,388

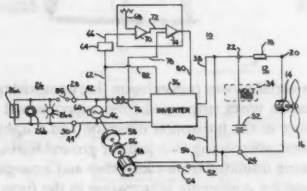
ENERGY UTILIZATION CIRCUIT AND METHOD

Alan W. Wilkerson, 410 Madero Dr., Thiensville, Wis. 53092

Continuation of Ser. No. 34,632, Apr. 30, 1979, abandoned. This application Nov. 10, 1980, Ser. No. 205,768

Int. Cl.³ H02J *1/12, 7/34;* H02P *13/20*

U.S. Cl. 307—46 **24 Claims**



1. A utilization circuit for utilizing the energy present in contemporaneous geophysical conditions to energize an a.c. load with a.c. power having selected voltage and frequency characteristics, said load being connectable to output terminals of said utilization circuit, said circuit comprising:

conversion means responsive to the energy of the contemporaneous geophysical conditions for converting the energy to d.c. electrical power;

inverting means having an input connected to said conversion means for receiving said d.c. electrical power, said inverting means altering said d.c. power to a.c. power and providing same to an output thereof connected to the output terminals of said circuit;

electrical power storage means interposed at the input of said inverting means and operatively associated with said conversion means for storing power from said conversion means when said conversion means is in an excess power condition and for augmenting the power of said conversion means to the inverting means when said conversion means is in a power deficit condition;

a.c. wave generating means connected in the output of said inverting means and to said circuit output terminals, said a.c. wave generating means assuming an operative condition, responsive to energization by said inverting means, establishing a wave having the selected voltage and frequency characteristics and maintaining said characteristics when subjected to the output of said inverting means;

means for synchronizing the operation of said inverting means and a.c. wave generating means; and

a.c. wave generating means operative condition signal means connected to said generating means for providing a signal responsive to the operative condition of said generating means, said signal means being coupled to said inverting means for controlling the power output of said inverting means to maintain the operative condition of said generating means.

4,366,389

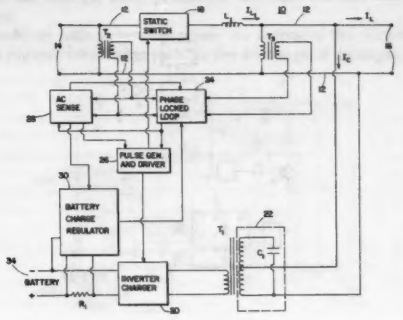
CONTINUOUSLY OPERATING STANDBY A-C POWER SYSTEM

Sam W. Hussey, Lakewood, Ohio, assignor to Reliance Electric Company, Cleveland, Ohio

Filed Jul. 13, 1981, Ser. No. 282,872

Int. Cl.³ H02J *9/06*

U.S. Cl. 307—66 **20 Claims**



1. A power-supply system having an input and an output connected by an A-C voltage transmission means for providing at said output a regulated A-C voltage, which comprises:

(a) sensing means to sense the voltage waves in said transmission means on the input and output sides of said system, said sensing means being directly connected to said transmission means whereby there is no substantial phase shift between said transmission means and said sensing means,

(b) means responsive only to said input A-C voltage wave for determining the occurrence in said input voltage wave of at least one of a predetermined number of undesirable conditions, said means generating a first signal of predetermined amplitude upon said occurrence and a second signal of predetermined amplitude upon the nonoccurrence of said undesirable conditions,

(c) a switch means interposed in said transmission means between said input and output thereof, said switch means normally operating in a closed condition and being adapted to be selectively inhibited, upon the occurrence of said first signal, to thereby prevent transmission of said input A-C voltage wave to said output,

(d) a standby power system including a bidirectional inverter connected between a battery and said output and adapted to supply from said battery an A-C voltage wave of predetermined frequency to said output during periods when said switch means is inhibited, and

(e) a phase control means operating in a loop between said input and said output, said loop being the only loop in said system and fully closed when said switch means operates in a closed condition, said phase control means responsive when said loop is fully closed to said input and output voltage waves and said second signal for controlling the phase relationship between said voltage waves, said phase control means responsive to said first signal for fully opening said fully closed loop and for controlling said frequency of said A-C voltage wave supplied by said standby power system.

4,366,390

EMERGENCY POWER UNIT

Soren H. Rathmann, Juvelvej 74, 8700 Horsens, Denmark

Filed Aug. 17, 1981, Ser. No. 293,103

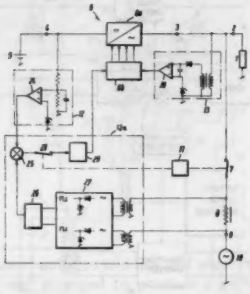
Claims priority, application Fed. Rep. of Germany, Jul. 16, 1980, 3128030; Sep. 2, 1980, 3033034

Int. Cl.³ H02J *9/00*

U.S. Cl. 307—66 **7 Claims**

1. An emergency power unit for an AC consumer, compris-

ing, a battery, an input terminal for an AC generator, a controllable bidirectional converter unit between said battery and said input terminal, an AC consumer output terminal between said battery and said input terminal, current limiting means between the AC side of said converter unit and said AC generator input terminal, AC voltage regulator means for stabilizing the AC voltage on the AC side of said converter unit by pulse



width modulation means, battery voltage regulator means for stabilizing battery voltage by shifting the phase position of the AC voltage at said consumer output terminal relative to the phase position at said input AC terminal by phase shifting the pulses for controlling said converter unit as a function of the battery voltage, said AC generator input terminal being in parallel to the AC voltage side of said converter unit.

4,366,391

FUEL BURNER CONTROL SYSTEM CIRCUITS

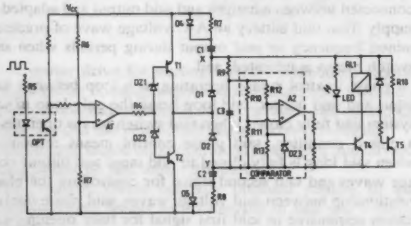
Alan Brightwell, Stourbridge, England, assignor to British Gas Corporation, London, England

Filed Feb. 24, 1981, Ser. No. 237,766

Claims priority, application United Kingdom, Nov. 6, 1980, 8035734

Int. Cl.³ H01H *35/00*

U.S. Cl. 307—129 **4 Claims**



1. A circuit for a fuel burner control system comprising a source of input pulses having a repetition rate which is normally within a predetermined range, frequency sensitive diode pump circuit means sensitive to said pulses to produce an output having a direct current component which exceeds a predetermined threshold when the repetition rate of said input pulses is within said predetermined range but not when the repetition rate is outside said range and comparator circuit means adapted to deliver a control signal to said fuel burner control system when said direct current component exceeds said predetermined threshold.

4,366,392

AERIAL POWER TRANSMISSION LINE WITH LIGHTNING PROTECTION WIRES DESIGNED ALSO TO TRANSMIT RF SIGNALS

Vyacheslav K. Ishkin, ulitsa Paustovskogo, 8, korpus 3, kv. 161, Moscow, U.S.S.R.

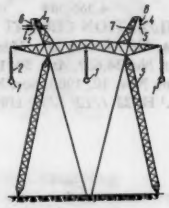
PCT No. PCT/SU79/00129, § 371 Date Sep. 3, 1980, § 102(e) Date Sep. 3, 1980, PCT Pub. No. WO80/01441, PCT Pub. Date Jul. 10, 1980

PCT Filed Dec. 5, 1979, Ser. No. 205,443

Claims priority, application U.S.S.R., Jan. 4, 1979, 2729716

Int. Cl.³ H02G *7/22, 13/00*

U.S. Cl. 307—147 **3 Claims**



1. An aerial power transmission line comprising three phase transmission wires suspended from supports and spaced from each other in the horizontal direction and a lightning protection system comprising two pairs of ground wires, said ground wires being insulated from each other and arranged to form an rf channel for conveying information in the form of rf signals, the ground wires of each pair being suspended by a string of insulators from said supports one under the other, one pair of said wires being located above said three phase transmission wires and in a vertical plane between the middle one, and one of the outside phase wires, the other pair of said ground wires being located above the transmission wires in a vertical plane between the middle one and the other of said outside phase wires.

4,366,393

INTEGRATED LOGIC CIRCUIT ADAPTED TO PERFORMANCE TESTS

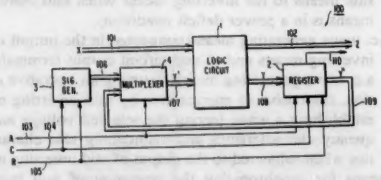
Yoshihiro Kasuya, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Mar. 17, 1980, Ser. No. 130,687

Claims priority, application Japan, Mar. 15, 1979, 54-30243; Mar. 15, 1979, 54-30253; Mar. 15, 1979, 54-30254; Mar. 15, 1979, 54-30256

Int. Cl.³ H03K *21/00, 19/20*

U.S. Cl. 307—221 R **9 Claims**



1. An easily testable integrated logic circuit, comprising:

a logic circuit receiving a plurality of first inputs and a plurality of second inputs for providing logic outputs;

means for generating a random signal;

multiplexing means having first and second multiplexing inputs and which, in response to a control signal, selectively supplies said first multiplexing inputs as said second

logic inputs, said first multiplexing inputs being received from said random number generator;

means for applying said control signal to said multiplexing means;

a plurality of flip-flops for receiving and storing outputs from said logic circuit, the outputs of said flip-flops being fed back to the second input of said multiplexing means; and

means for coupling said flip-flops to form a feedback shift register in response to said control signal, the output of one of said flip-flops constituting the output of said feedback shift register.

4,366,394

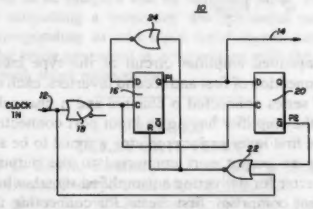
DIVIDE BY THREE CLOCK DIVIDER WITH SYMMETRICAL OUTPUT

Steven J. Clendening, Plano, and Tello D. Adams, Richardson, both of Tex., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Sep. 25, 1980, Ser. No. 190,683

Int. Cl.³ H03K *2/36, 21/06*

U.S. Cl. 307—225 R **9 Claims**



1. A divide by three digital clock divider circuit providing a symmetrical output, comprising:

flip-flop means for receiving clock pulses of frequency F; and

second means for alternately setting and resetting said flip-flop means on alternate inverted third clock pulse edges, and for maintaining the set and reset states of said flip-flop means for two consecutive clock pulse edges between set and reset transitions on said alternate third inverted clock pulse edges to provide symmetrical output pulses of frequency ⅓F with a substantially 50% duty cycle,

said second means comprising logic means responsive directly to said clock pulses and to the output of said first flip-flop means for resetting said first flip-flop means every sixth clock pulse edge and for setting said first flip-flop means every third clock pulse edge following a reset clock pulse edge such that said flip-flop means is set every sixth clock pulse edge symmetrically interleaved with said resetting.

4,366,395

CIRCUIT FOR CONTROLLING THE GRID POTENTIAL OF A PULSED X-RAY TUBE

Richard G. Gillard, Kenilworth, and Colin C. Oliver, Slough, both of England, assignors to EMI Limited, Hayes, England

Filed Oct. 28, 1980, Ser. No. 201,527

Claims priority, application United Kingdom, Nov. 21, 1979, 7940211

Int. Cl.³ H03K *17/12, 17/28*

U.S. Cl. 307—246 **8 Claims**

1. A circuit for producing a control voltage for application to a control grid interposed between an anode and a cathode of an X-ray tube to produce a pulse-modulated current flow in the tube, the circuit being for connection to the X-ray tube via a cable having a cable capacitance, and the circuit comprising:

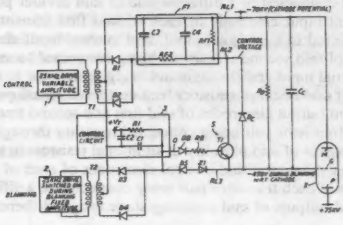
a first voltage generator for generating a first voltage for regulating the said current flow;

a second voltage generator for periodically generating a second voltage for suppressing the said current flow;

an output for connection to the cable for connecting the circuit to the tube;

means connecting the output to the generators such that the second voltage, when generated, overrides the first voltage;

a discharge path connected across the output of the circuit to provide a discharge path for the discharge of the capacitance of the cable, the path including a controllable switching means connected between the outputs of the first and second voltage generators,



means for deriving an actuating voltage from the second generator when the second voltage is produced; and a control means arranged to be actuated by the actuating voltage and responsive to the cessation of the second voltage to produce a control signal for controlling the switching means to complete the discharge path and define a desired transition between the application of the first and second voltages to the output of the circuit.

4,366,396

SEMICONDUCTOR CIRCUIT FOR TRANSFORMING SEQUENCES OF PERIODIC A-C SIGNALS

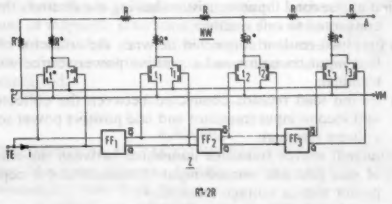
Helmut Rösler; Otto Mühlbauer, both of Munich, and Klaus D. Bigall, Vaterstetten, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Apr. 4, 1980, Ser. No. 137,420

Claims priority, application Fed. Rep. of Germany, Apr. 25, 1979, 2916765

Int. Cl.³ H03K *5/08, 5/156*

U.S. Cl. 307—261 **8 Claims**



1. Semiconductor circuit for transforming sequences of periodic a-c voltage signals, comprising a signal input carrying the signals to be transformed, a signal output, a supply potential input supplying a potential differing from reference potential, a given number greater than one of pairs of identical first and second transistors each having a current input electrode, a current output electrode and a control electrode, a clock controlled input, a chain of flip-flop counters being connected at an end thereof to said clock controlled input and having said

given number of counting stages so that said counting stages are disposed at increasingly greater distances from said clock controlled input along said chain in a given direction, said counting stages each having two outputs and each being assigned to a different transistor pair, a bridging resistor, a chain of resistors having said given number of resistors in sequence and having an end connected to said signal output, another end connected to said bridging resistor, and a plurality of divider points each being associated with a counting stage and being disposed between each two resistors so that said divider points associated with said counting stages are disposed at increasingly shorter distances from said signal output along said chain in said given direction, a plurality of additional resistors each being connected to a different one of said divider points, said current input electrode of each of said first transistors being connected to said signal input, said current input electrode of each of said second transistors being connected to said supply potential input and through said bridging resistor to said other end of said chain of resistors leading to said signal output, said current output electrodes of said first and second transistors of each transistor pair being connected together through a different resistor of said plurality of additional resistors to a different divider point, and said control electrodes of each of said transistors of each transistor pair being connected to a different one of said outputs of said counting stage assigned thereto.

4,366,397

LEVEL CONVERSION CIRCUIT

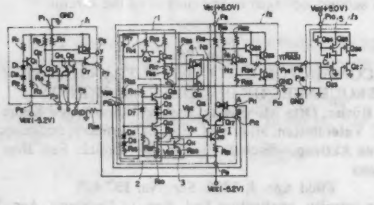
Nobuaki Kitamura, Kodaira; Kouji Masuda, Ohme, and Masao Mizukami, Yokohama, all of Japan, assignors to Hitachi, Ltd. and Hitachi Ome Electronic Co., Ltd., both of Tokyo, Japan

Filed Jun. 9, 1980, Ser. No. 157,936

Claims priority, application Japan, Jun. 29, 1979, 54-81350; Sep. 3, 1979, 54-111776

Int. Cl.³ H03K *19/092*

U.S. Cl. 307—264 **6 Claims**



1. A level conversion circuit for deriving an output signal having a positive level from an input signal having a negative level comprising:

first and second input transistors having the emitters thereof connected to one another;

a first load resistor connected between the collector of said first input transistor and a positive power source voltage terminal;

a second load resistor connected between the collector of said second input transistor and said positive power source voltage terminal;

a current source transistor connected between the emitters of said first and second input transistors and a negative power source voltage terminal;

an output circuit connected between said positive power source voltage terminal and a ground potential terminal, said output circuit being connected to receive signals from the collectors of said first and second input transistors and to produce said output signal;

a bias circuit feeding a first bias voltage to the base of said current source transistor, said bias circuit being connected between said positive power source voltage terminal and said negative power source voltage terminal; and

a third transistor receiving at the base thereof a second bias voltage generated by said bias circuit and having the collector and emitter thereof connected to the collector and emitter of said second input transistor, respectively.

4,366,398

AMPLIFIER CIRCUIT

Fumitaka Asami, Kunitachi, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

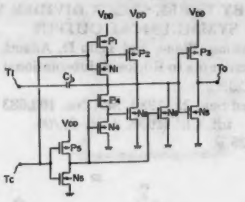
PCT No. PCT/JP79/00285, § 371 Date Jul. 17, 1980, § 102(e) Date Jul. 3, 1980, PCT Pub. No. WO80/01124, PCT Pub. Date May 29, 1980

PCT Filed Nov. 6, 1979, Ser. No. 201,387

Claims priority, application Japan, Nov. 17, 1978, 53-142533

Int. Cl.³ H03K *19/40*

U.S. Cl. 307—451 **10 Claims**



1. An improved amplifier circuit of the type including a cascade connection of first and second inverters, each of which consists of series connected p channel and n channel transistors, with the amplifier having an input port connected to the input of the first inverter for receiving a signal to be amplified and having an output port connected to the output of the second inverter for delivering an amplified signal, wherein the improvement comprises: first means for connecting the gates of both transistors of said first inverter to their respective drains when said amplifier is being operated; second means for connecting said gates of both transistors of said first inverter to potentials which set said both transistors of said first inverter at their cut-off conditions when said amplifier is not operated; and control port means for receiving a control signal for controlling the first and second means.

4,366,399

FREQUENCY DISCRIMINATION CIRCUIT

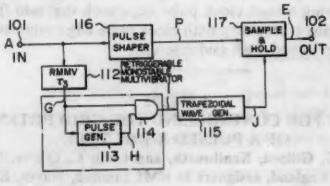
Takashi Furuhata, Yokohama, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 29, 1980, Ser. No. 221,324

Claims priority, application Japan, Dec. 26, 1979, 54/168369

Int. Cl.³ H03K *5/19, 6/00*; G11C *27/02*

U.S. Cl. 307—519 **6 Claims**



1. A frequency discrimination circuit for generating an output signal having a value proportional to a frequency of an input pulse signal in a predetermined range of frequencies to be detected, comprising:

(a) means including a retriggerable monostable multivibrator for generating a first square wave signal of a predetermined pulse width in synchronism with said input pulse signal except when said retriggerable monostable multivi-

brator is retriggered, said input pulse signal being applied as a triggering input to said retriggerable monostable multivibrator;

(b) gate means including a gate circuit said gate circuit receiving said first square wave signal and a delaying pulse as first and second inputs, respectively, said delaying pulse providing a delay time of at least a pulse width of a sampling pulse sufficient to perform a sampling and holding operation, said gate means generating a second square wave signal in response to said first square wave signal, said second square wave signal being synchronized with said first square wave signal except that a leading edge of said second square wave signal being delayed by a pulse width said delaying pulse as compared with said leading edge of said first square wave signal;

(c) a trapezoidal wave generator supplied with said second square wave signal for generating a signal, said signal being maintained at a minimum value during said first square wave signal is present and being varied monotonically with time at a period when said first square wave signal is absent; and

(d) a sample-and-hold circuit receiving said signal from said trapezoidal wave generator and said sampling pulse as its input to be sampled and its sampling input, respectively, for outputting a frequency discrimination output signal corresponding to said input pulse signal, said sampling pulse being generated in synchronism with the application of each input pulse signal.

4,366,400

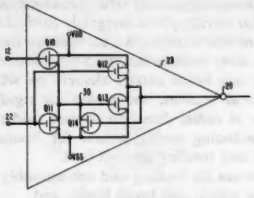
DELAY GATE CIRCUIT

Howard C. Kirsch, Emmaus, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Division of Ser. No. 929,369, Jul. 31, 1978, Pat. No. 4,250,414. This application Nov. 23, 1979, Ser. No. 96,897

Int. Cl.³ H03K *17/284, 3/353*

U.S. Cl. 307—594 **2 Claims**



1. Circuitry comprising: first, second, third, and fourth switching devices (Q10, Q11, Q12, and Q13, respectively) each having a control terminal and first and second output terminals;

the second output terminal of the first switching device (Q10) being coupled to the first output terminal of the second switching device (Q11), to the control terminal of the fourth switching device (Q13), and to a first circuitry terminal (30);

the control terminals of the second and third switching devices (Q11 and Q12) being coupled together to a second circuitry terminal (22);

the second output terminal of the third switching device (Q12) being coupled to the first output terminal of the fourth switching device (Q13) and to a third circuitry terminal 20;

the control terminal of the first switching device (Q10) serving as a first input terminal;

the second circuitry terminal (22) serving as a second input terminal;

the third circuitry terminal (20) serving as a circuitry output terminal; and

the first output terminals of the first and third switching devices (Q10 and Q12) being coupled together and being connectable to a first biasing source (VDD);

the second output terminals of the second and fourth (Q11 and Q13) switching devices being coupled together and being connectable to a second biasing source (VSS); and

a fifth switching device (Q14) having a control terminal coupled to the third circuitry terminal (20), said fifth switching device having a first output terminal coupled to the first circuitry terminal (30) and having a second output terminal coupled to the second output terminal of the second switching device (Q11).

4,366,401

ELECTROMAGNETIC DEVICES

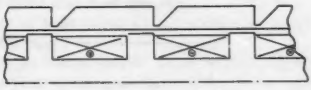
Alec H. Seilly, North Wembley, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Oct. 17, 1980, Ser. No. 197,903

Claims priority, application United Kingdom, Dec. 1, 1979, 7941560

Int. Cl.³ H02K *41/00*

U.S. Cl. 310—12 **4 Claims**



1. An electromagnetic device comprising a stator structure, electric windings on the stator structure to which in use, electric current can be supplied, axially spaced pole pieces extending about the stator structure and having a uniform radial extent outwardly from said stator to define an outer diameter of said stator, adjacent ones of said pole pieces assuming opposite magnetic polarity when the windings are supplied with the electric current and a tubular armature surrounding the stator structure and which partakes of axial movement when the windings are energized, the internal surface of the armature being cylindrical and continuous over essentially the entire length thereof, the diameter of said armature internal surface being slightly larger than said stator outer diameter, and the external surface of the armature having a plurality of steps defined thereon with each step extending for essentially one pitch of said pole pieces, said steps being machined so that over the pitch of a pair of adjacent pole pieces of the stator, at one end of the step distance the armature has a thickness such that magnetic saturation of the material forming the armature takes place when the windings are energized and at the other end of the step the armature is of a thickness such that magnetic saturation of the material forming the armature will not take place when the windings are energized with the varying amount of magnetic saturation creating flux lines along a path which is inclined to the central longitudinal axis of the armature to define an axial force on the armature when the windings are energized.

4,366,402

CYLINDRICAL CAPACITIVE TACHOGENERATOR

Günter Marsoner, Vienna, Austria, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 15, 1980, Ser. No. 216,109

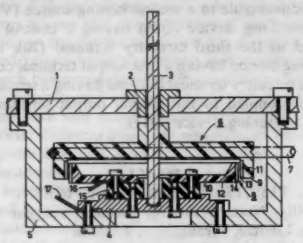
Claims priority, application Austria, Jan. 22, 1980, 331/80

Int. Cl.³ G01P *3/48*

U.S. Cl. 310—68 B **4 Claims**

1. A cylindrical capacitive tachogenerator comprising a rotor part and a stator part, one of said parts being arranged as an inner cylinder and the other part being a hollow outer cylinder coaxially disposed about the one part and defining an air gap between the cylindrical surfaces of said cylinders, said cylinders each having an equal number of respective teeth spaced from each other by tooth gaps and uniformly distrib-

uted around the circumference, the ratio of the effective capacitive width of a tooth at its free end to the effective capacitive width of an adjacent tooth gap at the same circumferential



level having a predetermined value, characterized in that the effective capacitive width of a tooth on one cylindrical surface is smaller than each of the effective capacitive widths of a tooth and of a tooth gap on the other cylinder surface.

4,366,403

BRUSH ASSEMBLY AND MOUNTING ARRANGEMENT FOR A PORTABLE TOOL

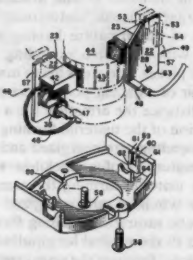
Frank F. Simpson, Staines; John W. Johnson, Wimbledon, and Robert J. Oatham, Caldecote, all of England, assignors to Black & Decker Inc., Newark, Del.

Filed Aug. 27, 1980, Ser. No. 181,818

Claims priority, application United Kingdom, Aug. 31, 1979, 7930273

Int. Cl.³ H02K *13/00*

U.S. Cl. 310—239 **12 Claims**



1. A portable electric tool comprising:
an electric motor housed in a motor casing;
a brush assembly having two brush units;
each brush unit including a planar board having a brush housing mounted thereon for holding a brush in contact with the commutator of the motor;
said motor casing having radial and axial internally positioned grooves constructed to removably receive edge portions of said planar boards therein at a location adjacent the commutator; and
a single cap removably mounted to the motor casing so as to expose both said brush units to facilitate their easy withdrawal from and insertion into said grooves, said cap having internally thereof portions in abutment with said planar boards to thereby firmly hold said planar boards in position in said grooves when said cap is secured in place.

4,366,404

BRUSH ASSEMBLY FOR DYNAMOELECTRIC MACHINES

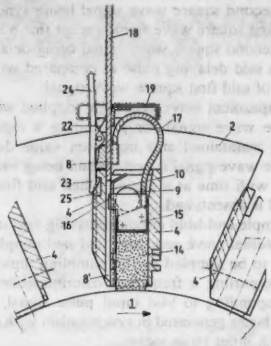
Herwin G. Ziegler, Nussbaumen, Switzerland, assignor to BBC, Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Mar. 10, 1981, Ser. No. 242,290

Claims priority, application European Pat. Off., Mar. 21, 1980, 80200257

Int. Cl.³ H02K *13/00*

U.S. Cl. 310—239 **16 Claims**



1. A brush assembly for dynamoelectric machines provided for the transfer of current from a stationary supporting structure to a rotating contact part, said brush assembly provided with brush boxes which are mechanically and electrically connected with the supporting structure to receive and radially guide plural brushes towards the rotating contact part, wherein the brushes are removable for control and replacement purposes from the stationary supporting structure, while the machine is running and under voltage, comprising:
said stationary supporting structure comprising a stationary brush bar having plural integrally formed stationary brush boxes in which respective brushes are to be disposed;
a sub-assembly slidable into said brush boxes and including at least one brush carrier element on which is mounted said plural brushes, and means for rigidly moving said brushes in radial direction toward said rotating contact part, including spring means for biasing said brushes against said rotating contact part;
locking means for locking said sub-assembly in an operating position within said brush boxes; and
means for simultaneously making an electrical connection between said stationary brush bar having said integrally formed brush boxes and said brushes upon sliding and locking of said sub-assembly within said brush boxes.

4,366,405

TACHOGENERATOR HAVING STRAY FLUX CANCELLING OUTPUT COILS

Fritz Schmider, Hornberg, Fed. Rep. of Germany, assignor to Papst Motoren KG, St. Georgen, Fed. Rep. of Germany

Filed Aug. 21, 1980, Ser. No. 180,110

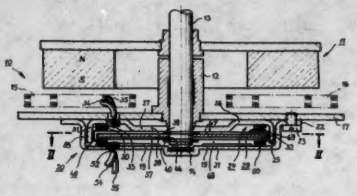
Claims priority, application Fed. Rep. of Germany, Aug. 23, 1979, 2934085

Int. Cl.³ H02K *1/22, 11/00, 16/04*

U.S. Cl. 310—268 **16 Claims**

1. A tachogenerator having two toroidal magnetic circuits and a rotor forming part of both said magnetic circuits, each of said magnetic circuits passing through said rotor, having a source of magnetic flux and having an individual winding for pick up of induced current, the configurations of the source of magnetic flux, rotor and winding of each circuit being such as to induce current in the winding of each magnetic circuit which is of a frequency dependent on the rotational speed of

the rotor, the frequency being the same for the currents induced in both windings, said windings being so wound that induced currents of said frequency in one winding are spatially in phase opposition to those in the other winding and so con-



nected that the said currents of said frequency reinforce each other, while electromotive forces in said windings induced by alternating stray magnetic flux passing through the tachogenerator compensate each other so as to inhibit the inducing of disturbing current.

4,366,406

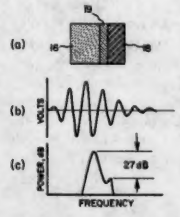
ULTRASONIC TRANSDUCER FOR SINGLE FREQUENCY APPLICATIONS

Lowell S. Smith, Schenectady, N.Y., and Axel F. Brisken, Shingle Springs, Calif., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 30, 1981, Ser. No. 249,286

Int. Cl.³ H01L *41/08*

U.S. Cl. 310—334 **6 Claims**



1. An ultrasonic transducer for single frequency applications comprising:

a front surface matched transducer comprising at least one transducer element to which are bonded first and second impedance matching layers that serve as acoustic transformers to match the high acoustic impedance of said element to the low acoustic impedance of the human body or water;

said first matching layer having a thickness proportional to 90/360 to 100/360 wavelength and said second matching layer next to said element having a thickness proportional to 35/360 to 55/360 wavelength, both at a given nominal reference frequency of operation;

said front surface matched transducer having a narrow band frequency spectrum and high sensitivity.

4,366,407

INCANDESCENT LAMP WITH SELECTIVE COLOR FILTER

Peter Walsh, Stirling, N.J., assignor to Duro-Test Corporation, North Bergen, N.J.

Continuation-in-part of Ser. No. 45,645, Jun. 5, 1979, which is a continuation of Ser. No. 863,155, Dec. 22, 1975, abandoned. This application Aug. 1, 1980, Ser. No. 174,711

Int. Cl.³ H01J *5/16*

U.S. Cl. 313—112 **20 Claims**

1. An incandescent electric lamp for producing visible light of a selected color region comprising:

an envelope of material which is transmissive to energy in the visible range,

filament means within said envelope which incandesces in response to electrical current applied thereto to produce radiant energy in both the visible and infrared regions,

means for supplying electrical current to said filament means,

and a coating on said envelope formed of a discrete film of a dielectric material sandwiched between two discrete films of a metal, said films forming a composite filter for transmitting therethrough energy over only a selected portion of the visible range produced by said filament to provide a distinct color output for the lamp.

4,366,408

ARC DISCHARGE LAMP HAVING LARGE ANODE RADIATING SURFACE

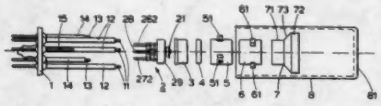
Geoffrey A. Cooper, and Donald W. Ward, both of Cambridge, England, assignors to Pye (Electronic Products) Ltd., Cambridge, England

Filed Sep. 22, 1980, Ser. No. 189,287

Claims priority, application United Kingdom, Oct. 5, 1979, 7934688

Int. Cl.³ H01J *61/06, 61/00*

U.S. Cl. 313—193 **9 Claims**

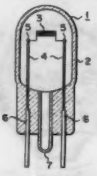


1. An electric arc discharge lamp comprising a discharge vessel, an ionizable gas fill, a cathode, an anode, means for applying an electrical potential between the cathode and anode to cause an electrical arc discharge therebetween and a refractory metal diaphragm located between the cathode and anode, the diaphragm having an aperture to restrict the area over which the discharge occurs, the anode including means for limiting the temperature thereof, said means including a cup shaped member having an aperture in its closed end and mounted with its closed end facing the diaphragm so that the apertures are aligned, and an outwardly flared extension projecting from its open end.

4,366,409
HALOGEN INCANDESCENT LAMP

Yasuhiro Nieda, Yokosuka; Kiyokazu Honda, Zushi, and Hidehiro Shinada, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed May 14, 1980, Ser. No. 149,699
Claims priority, application Japan, May 24, 1979, 54-63220
Int. Cl.³ H01J 17/16
U.S. Cl. 313—221 11 Claims

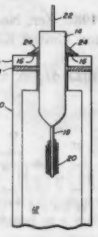


1. A halogen incandescent lamp performing a halogen cycle in operation, comprising a bulb formed of light-transmitting material in which gas containing halogen atoms and inert gas are enclosed, a tungsten filament with working temperature of 2,800° K or more contained in said bulb, at least a pair of lead-in wires connected to or integrally formed on both ends of said tungsten filament, respectively, and having a part sealed in said bulb, said lamp characterized in that said light-transmitting material is aluminosilicate glass having a strain point of 660° C. or higher and an average thermal expansion coefficient of 41×10^{-7} to 48×10^{-7} cm/cm/°C. at a temperature of 100° to 300° C., and that at least filament-side seal portions of said lead-in wires are molybdenum wires having a diameter of 0.4 to 0.6 mm.

4,366,410
VACUUM-TIGHT ASSEMBLY PARTICULARLY FOR A DISCHARGE TUBE

Carl F. Buhrer, Framingham, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Nov. 21, 1980, Ser. No. 209,242
Int. Cl.³ H01J 61/30; F16D 1/00; H05K 15/16; H01B 17/06
U.S. Cl. 313—221 9 Claims

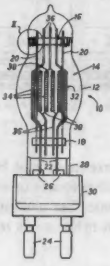


1. A vacuum-tight assembly comprising a high density polycrystalline ceramic body having a cavity and means for sealing said cavity from the atmosphere, said ceramic body having a thermal coefficient of expansion between about 55×10^{-7}/°C. and 105×10^{-7}/°C., said means for sealing comprising at least one closure member formed from a molybdenum alloy containing between 2 and 98 atom percent of a metal selected from the group consisting of titanium, vanadium, chromium, and mixtures thereof and a sealing material, said closure member and said sealing material having thermal coefficients of expansion closely matched to the thermal coefficient of expansion of said ceramic body over a wide temperature range.

4,366,411
ELECTRIC FILAMENT LAMPS

Kenneth B. Robinson, Leicester, England, assignor to Thorn Electrical Industries Limited, London, England

Filed Jun. 3, 1980, Ser. No. 155,930
Claims priority, application United Kingdom, Jun. 5, 1979, 7919539
Int. Cl.³ H01J 1/88, 19/42; H01K 1/18
U.S. Cl. 313—272 12 Claims



1. An electric filament lamp, comprising:
an envelope defined by a lamp wall;
a filament assembly within said envelope, said filament assembly comprising:
two spaced substantially parallel bridge members;
support members supporting said bridge members; and
a filament having filament sections supported between said bridge members;
said filament assembly being fixed relative to said envelope at an end of said assembly adjacent a first one of said bridge members;
wherein the improvement consists in:
wire coils fixed to the ends of the second one of said bridge members, said wire coils extending substantially transversely of said filament assembly outwardly towards the lamp wall to sustain end loads axially of the coil and thereby stabilize said filament assembly.

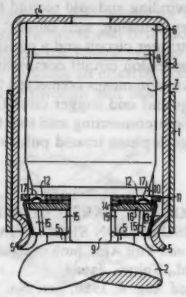
4,366,412
SURGE ARRESTER WITH PARALLEL-CONNECTED IMPROVED SPARK GAP STRUCTURE

Gerhard Lange; Oskar Sippekamp, both of Berlin, and Gerhard Schwenda, Vincenzenbronn, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Aug. 4, 1980, Ser. No. 156,413
Claims priority, application Fed. Rep. of Germany, Dec. 20, 1979, 2951467
Int. Cl.³ H01J 17/00, 21/00
U.S. Cl. 313—325 12 Claims

1. In a device for protection of circuits against surge voltages having a surge arrester with two electrodes, a flanged ring electrically connected to one of said surge arrester electrodes forming a first electrode of an auxiliary spark gap, an insulating ring seated against and in axial registry with said flanged ring having a plurality of spaced apertures therein, and a conductive spring contact holder connected to the other electrode of said surge arrester and carrying a plurality of spring contacts, the improvement of an annular metal cup forming a second electrode of said auxiliary spark gap, said cup comprising:
a base seated against said insulating ring spaced from said first electrode;
an outside wall connected to said base and engaging said spring contacts; and
a plurality of projections carried on said base aligned with and extending into said apertures in said insulating ring such that said auxiliary spark gap is less than the thickness

of said insulating ring and such that discharge of a predetermined surge voltage magnitude occurs across said



auxiliary spark gap within said apertures between said flanged ring and a highest elevation of said projections.

4,366,413

SECONDARY ELECTRON MULTIPLICATION TARGET

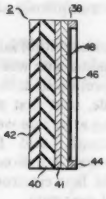
Hiroshi Washida; Kensaku Yano, both of Yokohama, and Yoshio Yamaoka, Kawasaki, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Oct. 16, 1980, Ser. No. 197,745

Claims priority, application Japan, Oct. 18, 1979, 54-133525

Int. Cl.³ H01J *31/48*

U.S. Cl. 313—377 **4 Claims**



1. A secondary electron multiplication target for a camera tube, comprising:

platelike signal electrode means formed of a conductive material, for removing secondary electrons to form a camera tube output signal;

a first porous layer consisting essentially of MgF_2 deposited on one side of said signal electrode for emitting secondary electrons in response to photoelectrons transmitted thereto through said signal electrode; and

a second porous layer formed of carbon deposited on said first porous layer on its opposite side from said signal electrode and having a lower secondary electron emitting ratio than that of said first porous layer and a dielectric constant of 6 or less.

4,366,414

ELECTRODE OF COLOR PICTURE TUBE ELECTRON GUN AND METHOD FOR MANUFACTURE THEREOF

Shigeharu Hatayama, Mobara; Masaaki Yamauchi, Togane, and Mamoru Ikeda, Mobara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

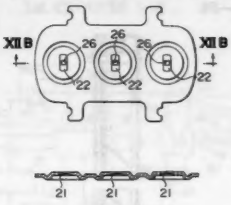
Filed May 5, 1980, Ser. No. 148,038

Claims priority, application Japan, May 18, 1979, 54-60410

Int. Cl.³ H01J *29/46, 9/02*

U.S. Cl. 313—409 **8 Claims**

1. An electrode of a color picture tube electron gun, having an aperture for passing an electron beam, said electrode comprising a first recess having a predetermined width and depth formed in a first surface of a single metal plate and having a predetermined length extending in a first predetermined direction substantially symmetrically with respect to an axis of said electron beam pass aperture, a second recess having a predetermined width and depth formed in said same single metal plate in a second surface opposite to said first surface and having a



predetermined length extending in a second direction substantially perpendicular to said first predetermined direction substantially symmetrically with respect to the axis of said beam pass aperture, and a predetermined gap between the bottoms of said first recess and said second recess, said gap extending in the parallel direction with said surfaces of the metal plate only within an area defined by said electron beam pass aperture.

4,366,415

PICTURE TUBE WITH AN ELECTRON GUN HAVING AN IMPROVED POTENTIAL SUPPLYING MEANS

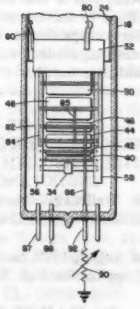
Shigeo Takenaka, and Eiji Kamohara, both of Fukaya, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed May 30, 1980, Ser. No. 140,953

Claims priority, application Japan, May 30, 1979, 54/66077

Int. Cl.³ H01J *29/56, 29/96*

U.S. Cl. 313—457 **7 Claims**



1. A picture tube device comprising:

an electron gun within an evacuated envelope comprising a cathode means for generating an electron beam, and a plurality of successively arranged electrodes for focusing and accelerating said electron beam,

potential means for supplying potentials to said electrodes; and,

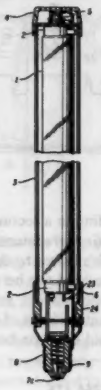
at least one supporting means, coupled to said potential means, for securely supporting each of said electrodes, said supporting means comprising a solid homogenous resistance glass body and at least one of said electrodes being embedded in and in direct connection with said resistance glass body, whereby a potential is supplied directly to said one electrode through said resistance glass body.

4,366,416

FLUORESCENT LAMP DEVICE

Nobuo Yokoyama, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 20, 1981, Ser. No. 246,011
Claims priority, application Japan, Apr. 2, 1980, 55-43019; Apr. 2, 1980, 55-43020
Int. Cl.³ H05B 41/16
U.S. Cl. 315—58 9 Claims



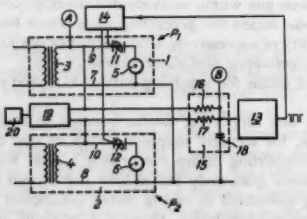
1. A fluorescent lamp device comprising:
a cylindrical outer tube;
a fluorescent lamp having a base at each end thereof disposed in said outer tube, each base having a pair of pins protruding therefrom for making connection thereto;
a cylindrical connection tube connected to one end of said outer tube;
a cap containing a glow starter and a condenser, said cap fixed to the other end of said outer tube;
a base member fixed to said connection tube; and
a ballast member comprising a thermistor, a conductive plate, a thermal adjustment member and a coil spring disposed in said base member.

4,366,417

SUPPRESSION CIRCUIT FOR INTERFERENCE PULSES IN TRANSFORMERS WITH HIGH LEAKAGE INDUCTANCE

Volker Wienstroth, Weilburg-Kubach, Fed. Rep. of Germany, assignor to Ernst Leitz Wetzlar GmbH, Wetzlar, Fed. Rep. of Germany

Filed Aug. 2, 1979, Ser. No. 63,099
Claims priority, application Fed. Rep. of Germany, Aug. 12, 1978, 2835379
Int. Cl.³ H05B 39/08
U.S. Cl. 315—296 7 Claims



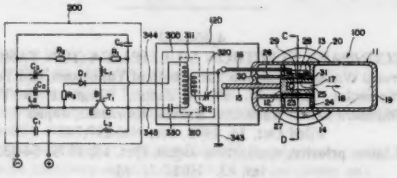
1. A circuit for the suppression of interference pulses in at least first and second transformers having high leakage inductances and having first and second current controlled switches connected to said transformers, said first transformer havin a first secondary winding and said second transformer having a second secondary winding, said current controlled switches controlled by a trigger circuit and a control device connected thereto, said suppression circuit comprising:
(a) pulse suppression means connected between said secondary windings and said trigger circuit, and
(b) means for interconnecting said two transformers secondary windings in phase to said pulse suppression means.

4,366,418

SPECTRAL SOURCE, PARTICULARLY FOR ATOMIC ABSORPTION SPECTROMETRY

Shinji Mayama, and Yoji Arai, both of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 6, 1980, Ser. No. 175,745
Claims priority, application Japan, Aug. 17, 1979, 54-104755
Int. Cl.³ H01J 11/04; G01J 3/30
U.S. Cl. 315—326 15 Claims



1. A spectral source comprising a lamp having a bulb and a base,
a first electrode disposed within said bulb, said first electrode having a bottom and a side wall extending from said bottom in an axial direction so as to form a hollow portion in said first electrode, said first electrode being provided with a first opening at its side wall for conducting electric current therethrough, said first opening extending through said side wall in a direction away from the axial direction, and said first electrode containing an element emitting a desired spectrum,
a second electrode disposed within said bulb to face said first opening, and arranged concentrically with the axial center of said first opening,
a high-frequency source connected between said first and second electrodes for establishing a high-frequency discharge therebetween to cause sputtering of said first electrode and excitation of a radiation having said desired spectrum,
a gas contained in said bulb for maintaining said discharge,
means for supplying a magnetic field to an atomic vapor produced by said sputtering, said means being formed in perpendicular to the direction of said first opening, and
a window provided in said bulb and arranged in the axial direction for transmitting said radiation therethrough.

4,366,419

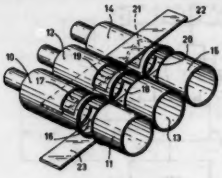
ASTIGMATIC ELECTRON LENS FOR A CATHODE-RAY TUBE

Piet G. J. Barten, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 19,015, Mar. 8, 1979, which is a continuation of Ser. No. 812,716, Jul. 5, 1977, abandoned. This application Oct. 14, 1980, Ser. No. 196,234
Claims priority, application Netherlands, Jul. 13, 1976, 7607722
Int. Cl.³ H01J 29/58
U.S. Cl. 315—382 5 Claims

1. In an electron gun assembly including a cathode, first and

second axially arranged tubular electrodes extending in that order from said cathode, at least one of said electrodes being non-rotationally symmetrical, and means for applying a substantially fixed potential between said first and second tubular electrodes whereby an electric field is produced which defines an astigmatic lens for focusing an electron beam emitted from the cathode and passing through said field,



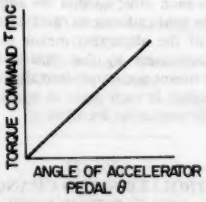
the improvement comprising a further electrode means positioned to influence said electric field, and means for applying a time varying voltage between said further electrode means and said first tubular electrode, whereby said further electrode means simultaneously varies the astigmatism and strength of said lens.

4,366,420

ELECTROMOBILE CONTROL DEVICE

Tsutomu Omae; Katsuji Marumoto, both of Hitachi, and Shotaro Naito, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 7, 1980, Ser. No. 109,846
Claims priority, application Japan, Jan. 12, 1979, 54-1328
Int. Cl.³ H02P *5/16*
U.S. Cl. 318—338 **22 Claims**



1. A control device for an electromobile provided with a shunt motor comprising:

command means for generating an output torque command for said shunt motor in accordance with the angle of depression of an accelerator pedal;

pattern generating means for storing, as predetermined patterns, plural pairs of values of armature and field currents capable of generating an output torque of said shunt motor indicated by said output torque command in such a manner as to produce a minimum loss in the driving system of said electromobile, and including means for generating an optimum armature current command and an optimum field current command in accordance with said predetermined patterns and said output torque command;

armature control means for passing an armature current corresponding to said armature current command through the armature winding of said shunt motor; and

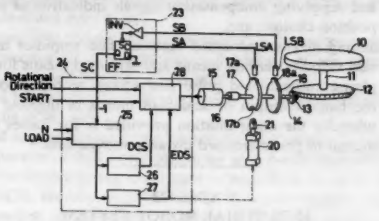
field control means for passing a field current corresponding to said field current command through the field winding of said shunt motor, said field control means being operative independent of said armature control means.

4,366,421

INDEX APPARATUS FOR A ROTARY TABLE

Kunihiko Eto, Toyota; Tetsuroo Yamakage, Anjoh, and Kuniyuki Niwa, Kariya, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Jun. 4, 1981, Ser. No. 270,234
Claims priority, application Japan, Jun. 23, 1980, 55-85011
Int. Cl.³ G05B *5/01*
U.S. Cl. 318—466 **6 Claims**



1. An index apparatus for a rotary table comprising:

a driving motor for rotating said rotary table;

a first actuating member connected to and rotated by said driving motor;

a first switch for generating a first signal when actuated by said first actuating member each time said rotary table is rotated a unit angle;

a second actuating member connected to and rotated by said driving motor;

a second switch for generating a second signal when actuated by said second actuating member each time said rotary table is rotated a unit angle;

said first and second actuating members being so formed that said first signal is generated earlier and disappears later than said second signal;

third signal generating means connected to said first and second switches for generating third signals each of which generated when said second signal is generated and disappears when said first signal disappears; and

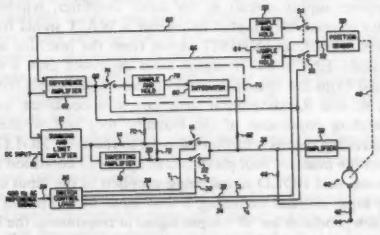
control means connected between said third signal generating means and said driving motor for counting the number of said third signals to thereby stop the rotation of said driving motor when the number of said third signals reaches to a predetermined number.

4,366,422

VELOCITY SENSING PULSE PAIR SERVO APPARATUS

Melvin H. Rhodes, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Aug. 25, 1980, Ser. No. 181,297
Int. Cl.³ G05B *13/00*
U.S. Cl. 318—561 **8 Claims**



1. Servo apparatus comprising, in combination:

amplifier means including first and second input means and first and second output means, the signals output at said

second output means, being inverted relative those output at said first output means, said amplifier means providing pulse pair output signals at said output means thereof;

load means for providing a mechanical position output in response to an electrical input signal;

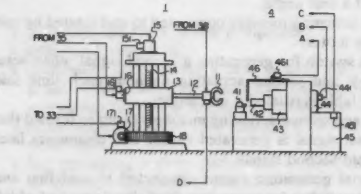
velocity sensing means, connected to said load means, for sensing position change of said mechanical output of said load means over a predetermined time subsequent to application of the pulse pair output signal to said load means and supplying compensation signals indicative of sensed position change; and

summing means, connected between said amplifier means, said velocity sensing means and said load means for supplying compensated pulse pair signals to reposition the mechanical output of said load means in discrete steps whereby the compensation provided is for forces detrimental to predetermined distance movements.

4,366,423
INDUSTRIAL ROBOT SYSTEM

Hajimu Inaba, Hino, and Shinsuke Sakakibara, Kunitachi, both of Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan

Continuation of Ser. No. 5,774, Jan. 23, 1979, abandoned. This application Jun. 1, 1981, Ser. No. 268,806
Claims priority, application Japan, Jan. 31, 1978, 53-8956
Int. Cl.³ G05B *9/02*
U.S. Cl. 318—563 **2 Claims**

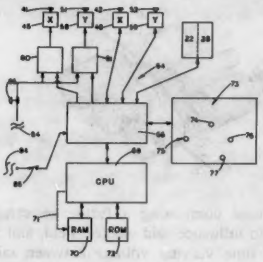


1. An industrial robot system for operating in conjunction with a machine tool, said robot system comprising a robot unit having an arm, a hand, a set of Z-, θ, and R-axis motors, a set of Z-, θ, and R-axis motion detectors, an operation panel means having a starting button, and a controlling means, said controlling means comprising a memory for storing instruction data including a feed rate, Z-, θ, and R-axis instruction values and data of functional instructions, input circuits, an address counter coupled to the input circuits through an AND gate, a controlling data register receiving a signal from the memory and the address counter through an AND gate and an OR gate, a present value register coupled to the robot unit, a comparator for comparing signals from the controlling data register and the present value register, a servo amplifier coupled to the comparator and to a switch for connecting and disconnecting a power supply circuit to the servo amplifier, wherein said input circuits are adapted to receive a WAIT signal from the machine tool, an INHIBIT signal from the machine tool, an EMERGENCY STOP signal from the robot unit, a starting signal from the operation panel means, and signals from said Z-, θ, and R-axis motion detectors in accordance with the operating conditions of the machine tool and wherein said controlling means is further adapted to receive a HOLD signal from the machine tool produced in a HOLD condition sensing device, said HOLD signal being supplied to the input circuits, the input circuits including a first input of a flip-flop circuit which produces an "0" output signal in response to the HOLD signal preventing the address counter from being updated, so that the operation of the robot is stopped and is prevented from starting again unless the starting button in the operation panel means is pushed.

4,366,424
METHOD AND APPARATUS FOR PROGRAMMING AND OPERATING A MACHINE TOOL

Robert E. McKechnie, 2814 W. 38th Ave., Vancouver, B. C., Canada (V6N 2Y4)

Filed May 23, 1979, Ser. No. 41,634
Int. Cl.³ G05B *19/10*
U.S. Cl. 318—568 **18 Claims**



1. A method of utilizing an apparatus to perform automatically a series of discrete operations utilizing a template which is provided with a pattern of indications of locations at which a tool is to work on the template or on a work piece, comprising the steps of:

(a) manually causing relative movement between successive indications on the template and a tracer to generate positional data relating to said indications, and recording said positional data,

(b) subsequently utilizing said recordings of positional data to generate relative movement between the template and an alignment means to attain approximate locations by coarse positioning,

the method being characterized by:

positioning the alignment means and template coarsely relative to each other so that the alignment means can respond to said indications, and utilizing directly the response of the alignment means to produce further relative movement by fine positioning to bring the alignment means accurately into alignment with each of the indications in turn prior to operating on the work piece at the particular location.

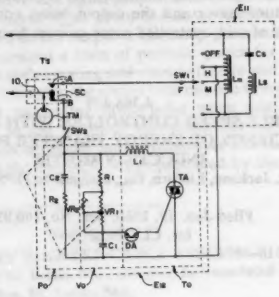
4,366,425
TIMER-CONTROLLED SPEED CHANGING DEVICE FOR ELECTRIC FANS

Chou-Ming Shen, 68-38 Yen Chi St., Taipei, Taiwan

Filed Apr. 21, 1981, Ser. No. 256,118
Int. Cl.³ H02P *1/26*
U.S. Cl. 318—779 **6 Claims**

1. A timer-controlled speed changing device for an electric fan comprising: a timing switch having a switching means and a timing means, said switching means being provided with a first contact terminal, a second contact terminal and a switch piece operable with said timing means, said switch piece being capable of coming into contact with said first or second contact terminal in association with the operation of said timing means; a first electrical circuit comprising a field winding and operable to operate said electric fan when a voltage is supplied thereto, a plurality of taps drawn from said field winding, each tap being provided with a tap terminal, a first voltage control circuit, a first selector switch operable to selectively connect each said tap terminal with said first voltage control circuit through a capacitor means, said first voltage control circuit having a first variable resistor and a first semivariable resistor connected in parallel with said first variable resistor, a resistor and a first auxiliary switch connected in series with said first variable resistor, said first voltage control circuit having one end connected to said first contact terminal

of said switching means and the other end connected to a power source; a triac circuit comprising a triac having a gate and first and second anodes, a diac having two leads and being respectively connected between said switch piece and said gate of said triac, an inductor having one end connected to said second anode of said triac and the other end connected to said power source, said first anode of said triac being connected to said first selector switch; a second voltage control circuit having a second variable resistor and a second semi-variable resistor connected in parallel with said second variable resistor, a second resistor and a second selector switch connected in series with said second variable resistor, said second voltage control circuit having one end connected to said second contact terminal and the other end connected to a power source; and, a protective circuit having a capacitor and resistor connected in series, said protective circuit having one end connected to said second voltage control circuit via a capacitor means and therefrom to said first selector switch, the other end of said protective circuit being connected to said power source.

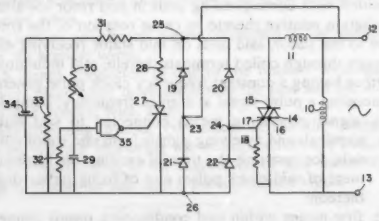


4,366,426

STARTING CIRCUIT FOR SINGLE PHASE ELECTRIC MOTORS

Zbigniew W. Turlej, Mississauga, Canada, assignor to S.A. Armstrong Limited, Toronto, Canada

Filed Sep. 8, 1981, Ser. No. 299,716
Int. Cl.³ H02P 1/42
U.S. Cl. 318—786 **6 Claims**



1. A time-responsive switching circuit for use with a single phase alternating current electric motor having a start winding and a run winding connected across a pair of first and second supply terminals, comprising:

a solid state bilateral switching device adapted to be connected in series with said start winding, said device having first and second main terminals for connection respectively to said start winding and to said second supply terminal, and a control terminal connected through an impedance to said second main terminal,

a full wave rectifier bridge having a pair of a.c. terminals and a pair of d.c. terminals, one a.c. terminal being connected to said control terminal of the solid state bilateral switching device,

circuit means for connecting the other a.c. bridge terminal to said first supply terminal,

an SCR connected across said d.c. bridge terminals to conduct current supplied by the rectifier bridge, the SCR having a gate,

a charging circuit consisting of a capacitor and a resistor connected in series across said d.c. bridge terminals, the charging circuit having a time constant defining a predetermined time delay,

a two-state trigger device connected between the common junction of the capacitor and resistor of the charging circuit and the gate of the SCR,

said trigger device applying a trigger voltage to the gate of the SCR, and

said trigger device being responsive to charging of the capacitor of said charging circuit to a predetermined level for disconnecting the trigger voltage from the gate of the SCR, thereby to render the SCR non-conducting and so switch off the solid state bilateral switching device.

4,366,427

PROTECTIVE METHOD AND APPARATUS FOR A CONTROLLED CURRENT INVERTER AND MOTOR CONTROL SYSTEM

Loren H. Walker, Salem, and John H. Cutler, Roanoke, both of Va., assignors to General Electric Company, Salem, Va.

Filed Apr. 22, 1980, Ser. No. 142,656
Int. Cl.³ H02P 5/40
U.S. Cl. 318—798 **18 Claims**

1. A protective circuit for an AC motor drive system utilized for supplying power of a variable current magnitude and frequency to an AC motor in response to a desired torque, comprising:

(a) a controlled variable DC current source for providing a DC output which varies in magnitude in response to a first control signal applied thereto;

(b) a source of variable frequency AC current for supplying current to said motor at a variable frequency in response to a second control signal applied thereto;

(c) circuit means connecting said DC current source to said source of variable frequency AC current;

(d) current control means for controlling the motor current magnitude in response to the desired torque;

(e) frequency control means for controlling motor current frequency in response to the desired torque;

(f) means for detecting a predetermined abnormal condition of said motor driven system and providing a first output signal in accordance therewith;

(g) means for detecting a regenerative operating mode of said motor and providing a second output signal in accordance therewith; and

(h) means responsive to said first and second output signals and being operable to generate a signal which is coupled to said frequency control means and which acts to vary the frequency of the motor current in a predetermined manner to cause the operating mode of said motor to shift from said regenerative mode toward a motoring mode.

4,366,428

ASYNCHRONOUS MOTOR DRIVE

Roland D. Bai, ulitsa Zorge, 225, kv. 9, Novosibirsk; Vladimir N. Brodovsky, 4 proezd Marlinoi Roschi, 10, kv. 96; Evgeny S. Ivanov, ulitsa Snezhnaya, 4, kv. 61, both of Moscow; Alexandr A. Kanep, ulitsa Nemirovicha-Danchenko, 28/1, kv. 46, Novosibirsk; Alexandr V. Feldman, ulitsa Geodezicheskaya, 1, kv. 52, Novosibirsk, and Alim I. Chabanov, ulitsa Uritskogo, 12, kv. 73, Novosibirsk, all of U.S.S.R.

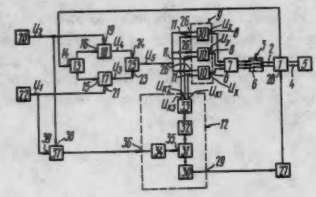
PCT No. PCT/SU80/00047, § 371 Date Nov. 10, 1980, § 102(e) Date Nov. 10, 1980, PCT Pub. No. WO80/01975, PCT Pub. Date Sep. 18, 1980

PCT Filed Mar. 13, 1980, Ser. No. 217,005

Claims priority, application U.S.S.R., Mar. 15, 1979, 2731207

Int. Cl.[3] H02P 5/40

U.S. Cl. 318—809 1 Claim



1. An electric drive for an asynchronous motor having a plurality of stator windings and a rotor comprising:

a sensor for sensing the angle of rotation of the rotor of the asynchronous motor, said sensor having an input and an output;

a phase converter having an input and first and second outputs, said input being connected to the output of said angle sensor;

a first multiplier unit having first and second inputs, and an output, the first input being connected to the first output of said phase converter;

a second multiplier unit having first and second inputs and an output, the first input being connected to the second output of said phase converter;

an active stator current setter having an output connected to the second input of said first multiplier unit;

a reactive stator current setter having an output connected to the second input of the said second multiplier unit;

an adder having first and second inputs and an output, the first input being connected to the output of said second multiplier unit and the second input being connected to the output of said first multiplier unit;

a plurality of phase sensitive rectifier corresponding to the number of stator windings, each having a first input, a control input and an output, the control input of each rectifier being connected to the output of said adder;

a controlled current source having a plurality of inputs and outputs corresponding to the number of said rectifiers, said inputs being connected respectively to the outputs of the phase phase sensitive rectifiers, the outputs being respectively connected to said stator windings;

a sinusoidal voltage former having an input and an output, the output being connected to the input of said angle sensor;

a polyphase voltage source, comprising:

a reference frequency setter having first and second outputs, the first output being connected to the input of said sinusoidal voltage former;

a frequency adder having first and second inputs and an output, the first input being connected to the output of said reference frequency setter;

a frequency divider having an input and an output, the input being connected to the output of said frequency adder;

a phase converter having an input and a plurality of outputs, the input being connected to the output of said frequency divider and the outputs being connected respectively to the inputs of said phase sensitive rectifiers;

a controlled rotor current frequency generator having an input and an output, the output being connected to the second input of said frequency adder;

a temperature sensor for sensing the temperature of the asynchronous motor, having an output;

a rotor current frequency correction unit having first and second inputs and an output, the first input being connected to the output of said active stator current setter, the second input being connected to the output of said temperature sensor and the output being connected to the input of said controlled rotor current frequency generator.

4,366,429

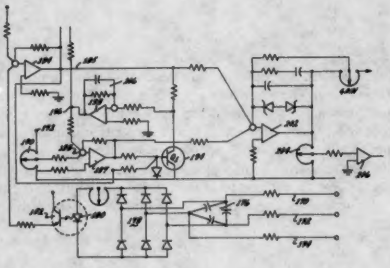
VARIABLE SPEED CONTROLLER WITH IMPROVED EFFICIENCY OF ENERGY TRANSFER FOR AN AC INDUCTION MOTOR

Robert D. Jackson, Lilburn, Ga., assignor to HPS, Inc., Atlanta, Ga.

Filed Jun. 19, 1980, Ser. No. 160,918

Int. Cl.[3] H02P 5/40

U.S. Cl. 318—811 1 Claim



1. A control for establishing the timing of firing pulses and for establishing the timing of clock pulses for an AC induction motor having a rotor and a stator electromagnetically interconnected by magnetic flux created by electric fields generated by coils of electrically conductive material having terminals through which electrical energy is transmitted thereto, said coils being positioned on said rotor, and on said stator in juxtaposition with corresponding coils in said rotor for alternating excitation relative thereto to cause rotation of the rotor relative to the stator, said coils on said stator receiving electrical energy through coiled terminals therein; said induction motor further having a constant frequency clock pulse generator for generating a pulse signal at a given frequency, comprising:

a. signal generating means connected to said stator coil terminals and receiving signals from said stator coil terminals, for resetting the time of exciting the beginning moment of said clock pulses and of firing pulses dependant thereon;

b. first means within said conditioning means connected to said stator coil terminals and receiving rectified alternating current signals from said stator coil terminals, said means for consolidating said received signals and producing a single output proportioned to the received signals and including a photocell detector producing as an output said single signal output proportioned to the received signals, and receiving as an input a light from a light emitting diode excited by said consolidated received signals;

c. second means within said conditioning means connected to receive the output signal of said first means, for comparing said signal with a reference limit of opposite polarity, and producing as an output a current regulating signal

when the signal proportional to the alternating rectified signal varies from the limit by which the comparator compares;

d. third means within said conditioning means connected to receive said signal proportional to the rectified alternating current signal, said third means including a resistance-capacitance circuit element for generating as an output a ramp type sawtooth signal for use as clock pulses which are a function of the average magnetomotor force reflected to the stator;

e. comparator means within said conditioning means connected to receive said signal proportional to the rectified, alternating current signal from the stator terminals and comparing it with the output of the ramp generator, producing as an output a train of periodic pulses for firing current in the coils creating said electric field in said stator coils, and for changing the period between one firing pulse and the next succeeding firing pulse when said signal proportional to the rectified, alternating current signal from the stator terminals has an amplitude less than the amplitude of the sawtooth wave produced by the ramp generator.

4,366,430

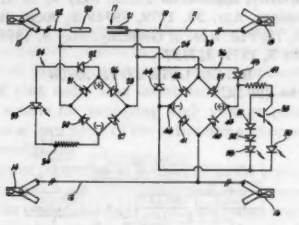
BATTERY BOOSTER CABLE ASSEMBLY

Bruce R. Wright, St. Louis, Mo., assignor to Associated Equipment Corporation, St. Louis, Mo.

Continuation of Ser. No. 191,531, Sep. 29, 1980, abandoned. This application Apr. 29, 1982, Ser. No. 372,958

Int. Cl.³ H02J 7/00; H01R 11/00

U.S. Cl. 320—25 **12 Claims**



5. A battery booster cable assembly, comprising:

(a) a pair of booster wires, each booster wire having first and second ends,

(b) first battery attachment means connected to the first ends of the booster wires,

(c) second battery attachment means connected to the second ends of the booster wires,

(d) switch means connected to one of the booster wires for selectively electrically interconnecting the first and second ends of said booster wire, and

(e) voltage-detecting means, connected across the switch means for directly measuring the voltage across the switch means for determining if the magnitude of said measured voltage is greater or less than a predetermined value.

4,366,431

BATTERY GASSING DETECTOR

John Santini, Centerreach, N.Y., assignor to EHV Systems, Inc., Setauket, N.Y.

Filed Dec. 3, 1980, Ser. No. 212,601

Int. Cl.³ H02J 7/04; G01N 13/00, 21/00, 21/47

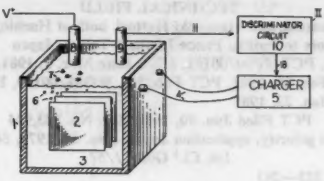
U.S. Cl. 320—46 **11 Claims**

1. An apparatus for detecting bubbling on the surface of a liquid, comprising:

a. light emitting means for directing a light at the surface of the liquid;

b. photodetector means for generating a signal responsive to the light reflecting from the surface of the liquid, having an input for the reflected light and an output responsive to the amount of liquid detected;

c. said light emitting means and said photodetector means being located above the surface of the liquid;



d. discriminator means for distinguishing signals caused by bubbling having an input connected to the photodetector means output and having an output responsive to the detection of bubbling in the liquid.

4,366,432

HIGHLY STABLE CONSTANT-VOLTAGE POWER SOURCE DEVICE

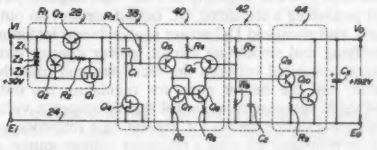
Masao Noro, Asaka, Japan, assignor to Stax Industries Limited, Tokyo, Japan

Continuation of Ser. No. 67,509, Aug. 17, 1979, abandoned. This application Mar. 30, 1981, Ser. No. 248,159

Claims priority, application Japan, Aug. 18, 1978, 53-100774

Int. Cl.³ G05F 1/64

U.S. Cl. 323—224 **6 Claims**



1. An audio device including: at least one active circuit to be driven at a constant voltage and provided with a signal path for passing an audio signal whose highest frequency is higher than the maximum audible frequency, the current necessary for driving the active circuit being dependent on the level of the audio signal; a first constant voltage power source device for said active circuit having a low impedance characteristic and a high noise elimination ratio for a wide frequency range, said constant voltage power source device further comprising:

a pair of input terminals supplied with an unregulated D.C. input voltage derived from an A.C. power source;

a pair of output terminals connected to the active circuit;

a power supply line for connecting one of the input terminals to one of the output terminals;

a ground line for connecting the other of the input terminals to the other of the output terminals;

a constant-current circuit provided in the power supply line for providing a constant output current; and

a constant voltage circuit connected between the power supply line and the ground line in parallel with the active circuit and having the single input terminal coupled to the power supply line;

the constant output current of the constant-current circuit being greater than the maximum current necessary for driving the active circuit;

the constant-voltage circuit (i) increasing the current flowing therethrough as the current necessary for driving the active circuit decreases, and (ii) decreasing the current flowing therethrough as the current necessary for driving

the active circuit increases, whereby a highly stable output voltage is applied to the active circuit.

4,366,433

OUTPUT VOLTAGE-DROP DETECTING APPARATUS

TECHNICAL FIELD

Ryoji Imazeki, and Masayuki Hattori, both of Hachioji, Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan

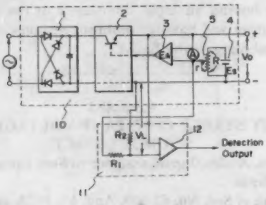
PCT No. PCT/JP80/00151, § 371 Date Mar. 2, 1981, § 102(e) Date Feb. 20, 1981, PCT Pub. No. WO81/00159, PCT Pub. Date Jan. 22, 1981

PCT Filed Jun. 30, 1980, Ser. No. 243,934

Claims priority, application Japan, Jun. 30, 1979, 54-82781

Int. Cl.³ G05F *1/64*

U.S. Cl. 323—281 **3 Claims**



1. An output voltage-drop detecting apparatus connected to a stabilized DC power source in order to monitor the output voltage of the power source and detect a drop in the output voltage, comprising:

stabilized DC power source means for receiving AC power and producing a stabilized DC output across two output ports, said stabilized DC power source means including a rectifying and smoothing circuit, power control circuit means connected between the rectifying and smoothing circuit and the output ports for regulating the output voltage in response to a control signal, reference voltage generating circuit means for generating a reference voltage by resistance-dividing a reference voltage source, and error amplifier means for generating the control signal in accordance with the difference between the reference voltage and the voltage at one of the output ports; and

output voltage drop detecting means for emitting a detection output signal should the voltage across the output ports of the stabilized DC power source means drop past a predetermined level, said output voltage drop detecting means including first and second resistors series-connected between the output of the reference voltage generating means and one of the output ports, said first and second resistors being connected at an intermediate connection point, and a comparator having a first input connected to the intermediate connection point and a second input connected to one of the output ports, the output of the comparator serving as the detection output signal.

4,366,434

VOLTAGE DETECTORS AND ELECTRICAL CONTINUITY CHECKERS

Tony Ellis, 79, Fairleigh, Sheffield 2, England

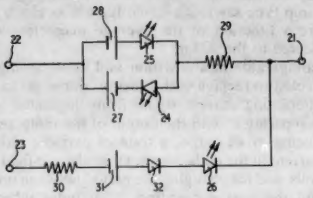
Continuation-in-part of Ser. No. 20,652, Mar. 15, 1979. This application Oct. 14, 1980, Ser. No. 196,873

Claims priority, application United Kingdom, Mar. 22, 1978, 11444/78

Int. Cl.³ G01R *31/02*

U.S. Cl. 324—51 **10 Claims**

1. A combined voltage detector and electrical continuity checker comprising: a housing; first, second and third light emitting diodes provided on said housing; first, second and third terminals provided on said housing; at least one external lead for connection to a terminal; at least one D.C. bias source for said first and second light emitting diodes which are used primarily for voltage detection and polarity; a D.C. supply for said third light emitting diode which is used primarily for continuity checking; first circuit connection means for connecting said bias source and the first and second light emitting



diodes in circuit between the first and second terminals; and second circuit connection means for connecting said D.C. supply and the third light emitting diode in circuit between the second and third terminals; said at least one D.C. bias source allowing the minimum voltage for conduction of the first and second light emitting diodes to be lowered.

4,366,435

POWER SUPPLY UTILIZING A THYRISTOR

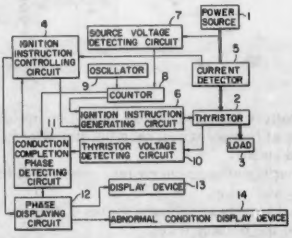
Kouichi Hyodo, Chofu, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Continuation-in-part of Ser. No. 35,073, May 1, 1979, abandoned. This application Feb. 4, 1981, Ser. No. 231,352

Claims priority, application Japan, May 8, 1978, 53-53744; United Kingdom, Apr. 30, 1979, 7914929; Australia, May 3, 1979, 46652/79; Fed. Rep. of Germany, May 3, 1979, 2917884; Canada, May 8, 1979, 327157

Int. Cl.³ G01R *31/22, 25/00*

U.S. Cl. 324—158 SC **7 Claims**



1. In an apparatus for supplying electric power from an AC power source to a load through a thyristor, said apparatus comprising a detector for detecting the voltage of said AC power source, a detector for detecting the current flowing through the thyristor, an oscillator generating a train of pulses, a counter for counting the number of the pulses in said train of pulses in response to an output of said voltage detector, an ignition instruction control circuit responsive to an output of said current detector for delivering a digital output indicative of a required ignition phase angle of the thyristor, and a circuit connected to receive outputs of said counter and said control circuit for delivering an ignition pulse to said thyristor when said outputs coincide with each other, the improvement comprising:

means for detecting the conducting state of said thyristor;

means responsive to an output of said conducting state detecting means for detecting the phase angle of said electric power at which completion of conduction of said thyristor occurs;

means responsive to the digital output of said control circuit

and to an output of said phase angle detecting means for converting said outputs into signals indicative of an ignition phase angle and a conduction completion phase angle; and

means for displaying said signals indicating said ignition phase angle and said conduction completion phase angle.

4,366,436

ENGINE ANALYZERS

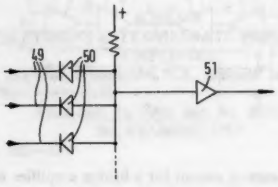
Geoffrey J. Everett, Somerton, and Christopher J. Hunt, Tiverton, both of England, assignors to TI Crypton Limited, Bridgewater, England

Filed Nov. 25, 1980, Ser. No. 210,344

Claims priority, application United Kingdom, Nov. 27, 1979, 7940836

Int. Cl.³ F02P *17/00*

U.S. Cl. 324—379 **6 Claims**



1. An engine analyser to analyse a parameter of a spark ignition internal combustion engine of the type having a plurality of pairs of ignition components, each component comprising a spark plug and a lead connected directly to said spark plug, and means for supplying high voltage pulses to said components at least some of the pulses being of opposite polarity, comprising:

a plurality of probes equal in number to the number of component pairs, each for connection to one component of a different one of said pairs to provide pulses corresponding to the ignition voltage or current pulses applied to the associated spark plug, there being at least one separate probe for each of said pairs; and

means connected to each of said probes to process said pulses and emit further pulses each coincident with the original pulse but all of one predetermined polarity irrespective of the polarity of the pulses from the probe for display of said further pulses.

4,366,437

DEVICE FOR MEASURING THE AMOUNT OF OXYGEN IN COMBUSTION GASES

Claude Lombard, Le Chesnay, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Oct. 2, 1980, Ser. No. 193,296

Claims priority, application France, Oct. 10, 1979, 79 25175

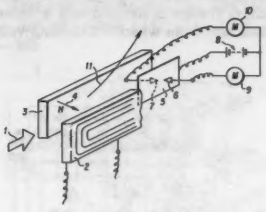
Int. Cl.³ G01N *27/00*

U.S. Cl. 324—464 **5 Claims**

1. A device for measuring the oxygen content in a flow of combustion gases, comprising:

deflection means in the path of said flow of combustion gases for producing a magnetic field in said flow, whereby oxygen in said flow is at least partially deflected by said magnetic field towards an oxygen rich concentration portion of said flow; and

means for measuring ionization potential of gases in said flow path at a point downstream from said deflection means in the direction of said flow, said means for measuring including means for separately measuring the ionization potential of gases in said oxygen concentration portion of said flow.



4,366,438

SODIUM IONIZATION DETECTOR

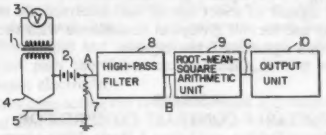
Hidefumi Ibe, Hitachi, and Izumi Yamada, Tokai, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 11, 1979, Ser. No. 83,658

Claims priority, application Japan, Oct. 11, 1978, 53-124172; Nov. 8, 1978, 53-136743

Int. Cl.³ G01N *27/00*

U.S. Cl. 324—468 **3 Claims**



1. A sodium ionization detector comprising thermal ionizer means for thermally ionizing sodium to produce an ion current, and detector means for detecting the magnitude of fluctuation of said ion current by detecting the RMS value of the amplitude of a sodium aerosol spike component of said ion current.

4,366,439

PCM DECODER

Kazuo Yamakido, Hachioji, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 10, 1980, Ser. No. 185,805

Claims priority, application Japan, Sep. 10, 1979, 54-115299

Int. Cl.³ H03K *9/00*

U.S. Cl. 329—104 **4 Claims**

1. A PCM decoder comprising

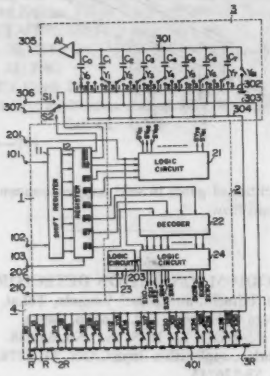
a first circuit for receiving in series input PCM signals forming signalling frames and non-signalling frames and for outputting in parallel the PCM signals;

a second circuit for delivering first and second control signals in accordance with the contents of said parallel output PCM signals;

a third circuit including first to eighth binary-weighted capacitors each having two ends, one end being connected with an output line and the other end connected selectively with one of plural voltage supply lines through a corresponding one of a first plurality of switches controlled by said first control signals; and

a fourth circuit having a voltage source and a resistor string circuit which is provided with plural intermediate taps for taking out divided portions of a voltage of said voltage source so that the voltage at one of said intermediate taps may be applied to one of said voltage supply lines through one of a second plurality of switches controlled by said second control signals; an analog voltage corresponding

to said PCM signal being delivered onto the output line of said third circuit, wherein said resistor string circuit has a first group of intermediate taps from which a decoding voltage for said parallel PCM signals corresponding to the non-signalling frames is derived and a second group of intermediate taps from which a decoding voltage for said parallel PCM signals corresponding to the signalling frames is derived and wherein said second circuit receives signalling frame signals and also delivers said second control signals to select one of said intermediate taps of said first and second groups in accordance with the content of said signalling frame signals.

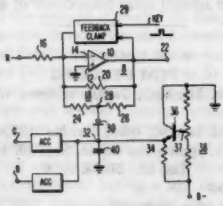


4,366,440

ADJUSTABLE CONTRAST COMPRESSOR

Charles L. Olson, Oaklyn, and Lucas J. Bazin, Vincentown, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Oct. 31, 1980, Ser. No. 202,486
Int. Cl.³ H04N 9/04; H03G 3/30
U.S. Cl. 330—11 **7 Claims**



1. A contrast compressor adapted for use with a source of video signals, comprising:

an amplifier including an inverting input terminal;

input resistance means coupled to said inverting terminal and to the source of video signals;

first and second resistance means coupled to an output terminal of said amplifier and to said inverting input terminal respectively for providing negative feedback for reducing the signal gain, said first and second resistance means being serially coupled and having a juncture therebetween;

current-controllable resistance means coupled to said juncture and to a point of reference potential for controlling the magnitude of said feedback for controlling said signal gain in response to the difference between the voltage at said output terminal of said amplifier and the voltage of said point of reference potential,

said current-controllable resistance means being conductive during those intervals during which said video signals take on a reference level thereby perturbing the operating point of said amplifier and deviating a reference level of said video signals from the desired value; and

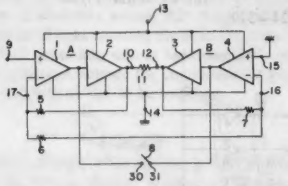
voltage clamping means coupled to said inverting input terminal for clamping at least a portion of said video signals including said reference level to said desired value.

4,366,441

SIGNAL-MUTING CIRCUIT FOR BRIDGE AMPLIFIER

Kiyomitsu Nishimura, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 7, 1980, Ser. No. 176,102
Claims priority, application Japan, Aug. 29, 1979, 54-110801
Int. Cl.³ H03F 1/14, 3/68
U.S. Cl. 330—51 **9 Claims**



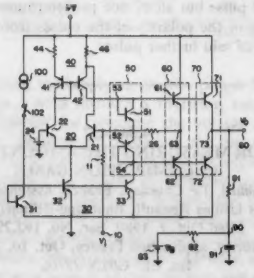
1. In a signal-muting circuit for a bridge amplifier having a potential source connected to two amplifying means each formed by connecting a non-reversible amplifier and a non-reversible buffer amplifier in series, an improvement characterized in that a switch is connected between the input terminals of the non-reversible buffer amplifiers as the final stage in each of said amplifying means so as to form a short-circuit whereby a signal is muted.

4,366,442

AMPLIFIER WITH MUTING CIRCUIT

Hisashi Yamada, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 10, 1980, Ser. No. 185,798
Claims priority, application Japan, Sep. 19, 1979, 54/120259
Int. Cl.³ H03G 3/34; H03F 3/30
U.S. Cl. 330—51 **6 Claims**



1. An amplifier comprising:

(a) an amplifier circuit having an input to which an electrical input signal is supplied and an output;

(b) a current mirror circuit having an input connected to the output of said amplifier circuit and an output;

(c) a single ended push-pull means, formed of a plurality of single ended push-pull circuits including at least first and second single ended push-pull circuits connected in paral-

lel to each other, for amplifying said electrical input signal, said first single ended push-pull circuit being formed on a pair of diode-connected complementary transistors having emitter electrodes which are connected to each other and which are connected to said amplifier circuit, and said second single ended push-pull circuit being formed of a pair of diode-connected complementary transistors having emitter electrodes which are connected to each other, which are electrically insulated from the emitter electrodes of said first single ended push-pull circuit and which are connected to an output terminal from which an output electrical signal is generated;

(d) bias circuit means, connected between said current mirror circuit and said single ended push-pull means, for supplying bias to said single ended push-pull means; and

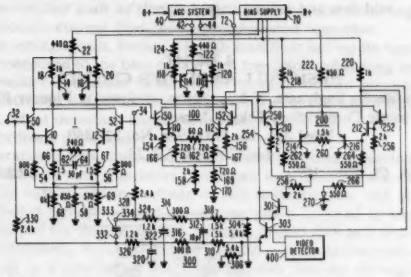
(e) muting means, connected at least to said bias circuit and including a muting switch, for stopping the supply of current at least to said bias circuit means in response to the switching operation of said muting switch, thereby muting the output electrical signal.

4,366,443

TELEVISION INTERMEDIATE FREQUENCY AMPLIFIER

Jack R. Harford, Flemington, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 26, 1980, Ser. No. 163,143
Int. Cl.³ H03G *3/30*
U.S. Cl. 330—254 **7 Claims**



1. A television intermediate frequency amplifying system comprising:

a first amplifying stage having a signal input and a signal output, and including a first amplifying transistor coupled in a common emitter configuration, a first resistor coupled between the collector of said first transistor and a source of supply potential and passing a first direct current therebetween, and means coupled in shunt with said first resistor and responsive to variations of a first gain control current for causing gain variations for said first amplifying stage opposite in sense as said first gain control current variations with negligible disturbance of the magnitude of said first direct current; and

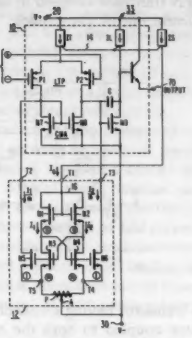
a second amplifying stage having a signal input coupled to the signal output of said first amplifying stage, and including a second amplifying transistor coupled in a common emitter configuration, a second resistor coupled between said emitter of said second transistor and a point of signal reference potential and passing a second direct current therebetween, and means coupled in shunt with said second resistor and responsive to variations of a second gain control current for causing gain variations for said second amplifying stage of the same sense as said second gain control current variations with negligible disturbance of the magnitude of said second direct current.

4,366,444

TEMPERATURE-INDEPENDENT CURRENT TRIMMING ARRANGEMENT

Otto H. Schade, Jr., North Caldwell, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 2, 1981, Ser. No. 230,382
Int. Cl.³ H03F *1/30, 3/45, 3/16*
U.S. Cl. 330—256 **12 Claims**



1. A current amplifier comprising:

a substrate;

an input terminal, first and second output terminals, and third and fourth terminals on said substrate;

first, second, third, fourth, fifth and sixth transistors of like conductivity type on said substrate, each having respective output and common electrodes and a main conduction path therebetween, and each having a respective input electrode;

means connecting the respective input and output electrodes of said first and second transistors to said input terminal;

means connecting the common electrode of said first transistor to the output electrode of said third transistor and to the respective input electrodes of said fourth and sixth transistors;

means connecting the common electrode of said second transistor to the output electrode of said fourth transistor and to the respective input electrodes of said third and fifth transistors;

means coupling the respective output electrodes of said fifth and sixth transistors to said first and second output terminals respectively;

means connecting the respective common electrodes of said third and fifth transistor to said third terminal;

means connecting the respective common electrode of said fourth and sixth transistors to said fourth terminal;

a common terminal; and

resistance means for completing respective first and second resistance connections between said third and fourth terminals, respectively, and said common terminal, said first and second resistance connections exhibiting respective resistances in a proportion substantially unaffected by temperature.

4,366,445

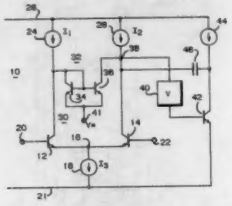
FLOATING NPN CURRENT MIRROR

David L. Cave, Tempe, Ariz., and Walter R. Davis, Sunnyvale, Calif., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 27, 1981, Ser. No. 238,800
Int. Cl.³ H03F *3/45;* G05F *3/20*
U.S. Cl. 330—257 **8 Claims**

1. A current mirror circuit having a first voltage conductor, for providing an output current which varies in a predetermined manner to an input current, said current mirror circuit coupled to an operational amplifier having a differential pair of

transistors comprising a first NPN transistor and a second NPN transistor, said first and second NPN transistors having a collector, base, and emitter, said emitters both coupled together and to a second voltage conductor, the base of said first NPN transistor coupled to a first input signal conductor and the base of said second NPN transistor coupled to a second input signal conductor, the collector of said first NPN transistor coupled to a third voltage conductor and the collector of said second NPN transistor coupled to said third voltage conductor, said current mirror comprising:



a third NPN transistor having a collector, base, and emitter, the collector coupled to both the collector of said first NPN transistor and the base of said third NPN transistor; and

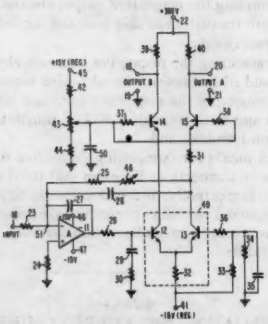
a fourth NPN transistor having a collector, base, and emitter, the collector coupled to the collector of said second NPN transistor, the base coupled to the base of said third NPN transistor, the emitter coupled to both the emitter of said third NPN transistor and said first voltage conductor, wherein said first voltage conductor is maintained at a voltage between the voltages of said second and said third voltage conductors.

4,366,446

FEEDBACK LINEARIZATION OF CASCODE AMPLIFIER CONFIGURATIONS

Elmer L. Henderson, Philadelphia, Pa., and Henry F. Inacker, Cinnaminson, N.J., assignors to RCA Corporation, New York, N.Y.

Filed Oct. 22, 1980, Ser. No. 199,599
Int. Cl.³ H03F *3/45, 1/34*
U.S. Cl. 330—260 **5 Claims**



1. A linearized high voltage amplifier for providing a linearly amplified high voltage output of an input signal when coupled to a first fixed potential, a second fixed potential, and a third fixed potential, with said second and third potentials having respective differences from said first potential that are relatively small and large respectively, said amplifier comprising:

a first impedance having first and second terminals and means for coupling said third potential to the first terminal of said first impedance;

a second impedance that is a fraction of said first impedance having first and second terminals and means for coupling said second potential to the first terminal of said second impedance;

means including coupling means when coupled between said first and said second potentials for generating a constant current between said coupling means, said constant current generating means including input signal circuitry to which said input signal is applied and first and second output signal circuits for providing in response to signals applied to said input signal circuitry first and second output signals having currents which sum is said constant current, said first and second output signal currents having complementary variations at said first and second output signal circuits, respectively;

a first current conducting device having an input electrode coupled to one of said first and second output signal circuits of said constant current generating means and having an output electrode coupled to the second terminal of said first impedance

means for coupling the second terminal of said second impedance to said first output signal circuit for applying said first output signal of said constant current generating means to said second impedance to produce a voltage thereacross proportional to the current of said first output signal; and

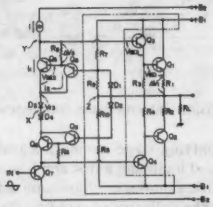
degenerative feedback means coupled to said input signal circuitry and responsive to the voltage across said second impedance for providing a signal proportional to said voltage to said input signal circuitry to thereby linearize said first and second output signals.

4,366,447

PUSH-PULL AMPLIFIER CIRCUIT

Yoshinobu Sugiyama, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jan. 22, 1981, Ser. No. 227,560
Int. Cl.³ H03F *3/26*
U.S. Cl. 330—267 **4 Claims**



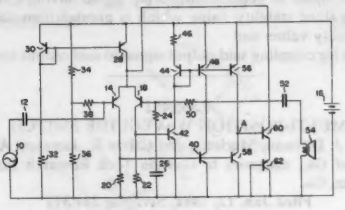
1. A push-pull amplifier circuit comprising: at least one pair of output transistors operatively coupled for performing a push-pull operation, said output transistors receiving operating current from first power supply means via supply terminals thereof; variable bias generating circuit means for controlling bias voltages applied to the bases of said output transistors according to currents in said output transistors to cause said output transistors to operate in active regions, said variable bias generating circuit means receiving operating current from second power supply means electrically isolated from said first power supply means; and circuit means for sensing voltage variations at said supply terminals and for applying voltage variation components corresponding to the sensed voltage variations to said variable bias generating circuit means to cause said variable bias generating circuit means to control said bias voltages applied to said bases of said output transistors in such a manner as to compensate for shortages in bias of said amplifier circuit at times of high power output.

4,366,448

POWER-AMPLIFYING CIRCUIT

Hiromi Kusakabe, Yokohama, and Masahide Nagumo, Kawasaki, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Mar. 26, 1980, Ser. No. 134,303
Claims priority, application Japan, Mar. 31, 1979, 54-38616; Mar. 31, 1979, 54-38631
Int. Cl.³ H03F 3/26
U.S. Cl. 330—268 6 Claims



1. A power-amplifying circuit comprising:
a pre-amplifier stage;
an output stage having first and second transistors in a push-pull arrangement and adapted to be driven by said pre-amplifier stage, said first transistor having its emitter grounded;
current detection means, having a third transistor with its base-to-emitter path connected in parallel with the base-to-emitter path of said second transistor, for detecting electric current flow through said second transistor;
converting means, having a fourth transistor having its base connected to the base of said first transistor and having its emitter connected to an output terminal of said current detection means, for converting an output current of said current detection means to a voltage;
a feedback path; and
operation means connected to said converting means, having fifth and sixth transistors connected such that the sum of the base-to-emitter voltage of said first transistor and an output voltage of said converting means is equal to the sum of the base-to-emitter voltages of said fifth and sixth transistors, for supplying an electric current corresponding to a product of operating currents flowing through said first and second transistors to said pre-amplifier stage through said feedback path.

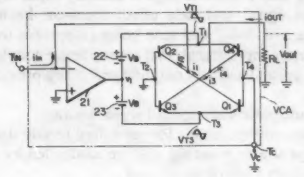
4,366,449

INTEGRATED VOLTAGE CONTROL VARIABLE GAIN CIRCUIT AND A SIGNAL TRANSMISSION CIRCUIT USING THE SAME

Tetsuo Sato, Fussa, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed May 22, 1980, Ser. No. 152,295
Claims priority, application Japan, Jun. 11, 1979, 54-72290
Int. Cl.³ H03G 3/10; H03F 3/68
U.S. Cl. 330—278 10 Claims

1. A voltage control variable gain circuit constructed as a semiconductor integrated circuit comprising:
(a) a first operational amplifier circuit having an inverting input terminal, a non-inverting input terminal and an output terminal, said inverting input terminal leading out of said semiconductor integrated circuit to act as a first input terminal of said semiconductor integrated circuit, said non-inverting input terminal leading out of said semiconductor integrated circuit and connected to a reference potential;
(b) a second operational amplifier circuit having an inverting input terminal, a non-inverting input terminal and an output terminal, said inverting input terminal leading out of said semiconductor integrated circuit to act as a second input terminal of said semiconductor integrated circuit, said non-inverting input terminal leading to the outside of said semiconductor integrated circuit and connected to said reference potential;
(c) a first gain control section connected to said output terminal of said first operational amplifier circuit within said semi-integrated circuit and having an input terminal, a control input terminal and an output terminal, said input terminal being electrically connected to said inverting input terminal of said first operational amplifier circuit within said semiconductor integrated circuit, said control input terminal leading to the outside of said semiconductor integrated circuit to act as a first control input terminal of said semiconductor integrated circuit;
(d) a second gain control section connected to said output terminal of said second operational amplifier circuit within said semiductor integrated circuit and having an input terminal, a control input terminal and an output terminal, said input terminal being electrically connected to said inverting input terminal of said second operational amplifier circuit within said semiconductor integrated circuit, said control input terminal leading to the outside of said semiconductor integrated circuit to act as a second control input terminal of said semiconductor integrated circuit;
(e) a third operational amplifier circuit having an inverting input terminal, a non-inverting input terminal and an output terminal, said inverting input terminal being electrically connected to said output terminal of said first gain control section within said semiconductor integrated circuit and leading to the outside of said semiconductor



integrated circuit, said non-inverting input terminal leading to the outside of said semiconductor integrated circuit and connected to said reference potential, and said output terminal leading to the outside of said semiconductor integrated circuit to act as a first output terminal of said semiconductor integrated circuit;
(f) a fourth operational amplifier circuit having an inverting terminal, a non-inverting terminal and an output terminal, said inverting input terminal being electrically connected to said output terminal of said second gain control section within said semiconductor integrated circuit and lading to the outside of said semiconductor integrated circuit, said non-inverting input terminal leading to the outside of said semiconductor integrated circuit and connected to said reference potential, and said output terminal leading to the outside of said semiconductor integrated circuit to act as a second output terminal of said semiconductor integrated circuit; and
(g) fifth operational amplifier circuit having an inverting input terminal, a non-inverting input terminal and an output terminal, said inverting input terminal leading to the outside of said semiconductor integrated circuit to serve as an optional input terminal for the semiconductor integrated circuit, said non-inverting input terminal leading to the outside of said semiconductor integrated circuit and connected to said reference potential, and said output terminal leading to the outside of said semiconductor integrated circuit to provide an external terminal to permit either the connection or disconnection of said fifth opera-

tional amplifier circuit to the inverting input terminal of the second operational amplifier circuit.

4,366,450

AUTOMATIC GAIN CONTROL CIRCUIT

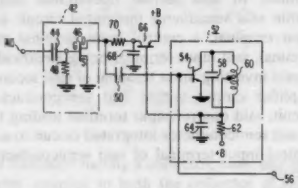
Hisashi Suganuma, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 930,116, Aug. 1, 1978, Pat. No. 4,229,707. This application Feb. 20, 1980, Ser. No. 122,905

Claims priority, application Japan, Aug. 1, 1977, 52/81552; Aug. 10, 1977, 52/95814

Int. Cl.³ H03G *3/30*; H03F *3/193*

U.S. Cl. 330—285 **5 Claims**



1. An automatic gain control circuit comprising:

(a) a preamplifier means having a field effect transistor (FET) responsive to a high frequency input signal for amplifying said high frequency input signal and for providing said amplified high frequency input signal as an output signal, said field effect transistor having a gate, source and drain, said gate being responsive to said high frequency input signal, said source being coupled to electrical ground and said output signal being provided at said drain;

(b) an automatic gain control signal source;

(c) supply voltage means for providing to said drain from a voltage source a supply voltage controlled by said automatic gain control signal; and

(d) means for biasing said field effect transistor such that said gate and said source are at substantially the same d.c. potential for all values of said automatic gain control signal.

4,366,451

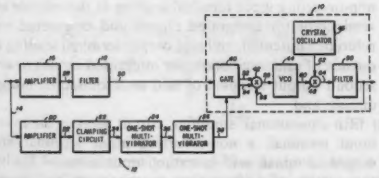
CHROMINANCE SUBCARRIER REGENERATION NETWORK

Leonard Kowal, 12647 Miller Ave., Saratoga, Calif. 95070

Continuation of Ser. No. 86,448, Oct. 19, 1979, abandoned. This application Nov. 12, 1981, Ser. No. 320,524

Int. Cl.³ H03L *7/08*

U.S. Cl. 331—20 **7 Claims**



4. A phase-locked loop for generating at an output terminal an output signal which tracks in phase and frequency a coherent component of a gated input signal derived from a signal source in which the frequency stability has been degraded, the loop comprising in combination:

a phase detector connected to the output terminal for comparing the phase of the output signal with that of the input signal to develop an error signal;

a voltage-controlled oscillator having a stability of a first stability value and driven by the error signal for generating a correcting signal;

oscillator means for generating a reference signal having a stability of a second stability value which is higher than said first stability value and having a frequency greater than that of said correcting signal;

a mixer for combining said correcting signal with said reference signal to generate an output signal having a stability of a third stability value which is greater than said first stability value; and

means for coupling said output signal to said output terminal.

4,366,452

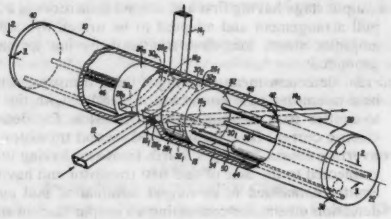
MULTI-POSITION WAVEGUIDE SWITCH

William J. Dittman, Marietta, and Calvin R. Jameson, Atlanta, both of Ga., assignors to Georgia Tech Research Institute, Atlanta, Ga.

Filed Jan. 12, 1981, Ser. No. 224,371

Int. Cl.³ H01P *1/10*

U.S. Cl. 333—108 **2 Claims**



1. A multi-position waveguide switch comprising:

a housing defining a longitudinal axis and having plural ports and communication with waveguides extending from said housing;

a waveguide switching assembly disposed in said housing and including plural waveguide channels each having at least one input port and at least one output port, wherein at least two of said channels are displaced axially a predetermined distance, said input and output ports positioned relative to predetermined of said housing ports such that upon selected axial translation of said waveguide switching assembly, selected of said input and output ports are aligned and in communication with said predetermined housing ports;

means for selectively axially translating said waveguides switching assembly such that selected of said input and output ports are aligned and in communication with said predetermined housing ports; wherein said translating means comprising;

spring means coupling said housing and said waveguide switching assembly for biasing said assembly in a first direction;

displacement means coupled to said waveguide switching assembly for selectively translating said assembly in a second direction opposite said first direction against the bias of said spring means;

wherein said displacement comprises at least one air cylinder having a piston coupled to said waveguide switching assembly, said cylinder adapted to be connected to a source of pressurized air such that upon application of pressurized air thereto, said piston and said assembly undergoes a predetermined translation; and

plural air cylinders each having a piston coupled to said waveguide switching assembly, and each adapted to be connected to a source of pressurized air, each piston having a respective stroke, wherein selective application of pressurized air to a selected air cylinder produces a predetermined transla-

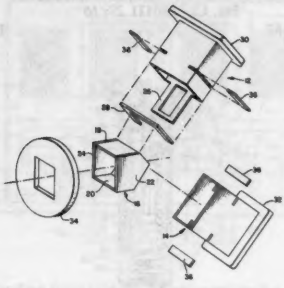
tion of the respective piston and said assembly in dependence on the stroke of said respective piston.

4,366,453

ORTHOGONAL MODE TRANSDUCER HAVING INTERFACE PLATES AT THE JUNCTION OF THE WAVEGUIDES

Helmut Schwarz, Satellite Beach, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Jan. 19, 1981, Ser. No. 226,092
Int. Cl.³ H01P 5/16
U.S. Cl. 333—117 11 Claims



1. An orthogonal mode transducer comprising:

a central square waveguide capable of propagating signals having first and second orthogonal polarizations;

a first rectangular waveguide capable of propagating a signal having said first polarization but not a signal having said second polarization; and

a second rectangular waveguide capable of propagating a signl having said second polarization but not a signal having said first polarization,

wherein said first and second rectangular waveguides are coupled to the central waveguide so that the longitudinal axes of the first and second rectangular waveguides are symmetrically arranged relative to the longitudinal axis of the central waveguide to form a symmetrical Y-configuration, and

wherein substantially flat interface plates having length and width dimensions at least as great as lengths of respective sides of the rectangular waveguides are coupled between the rectangular waveguides and the square waveguide at the point where the respective waveguides are coupled together to match the size of the openings at the ends of the rectangular waveguides with the size of the opening at an end of the square waveguide, said interface plates including openings to permit passage of signals between the square and rectangular waveguides.

4,366,454

MICROWAVE HYBRID PHASE MODULATORS

Edward Salzberg, 19 Black Oak Rd., Wayland, Mass. 01778

Filed Dec. 9, 1980, Ser. No. 214,495
Int. Cl.³ H01P 1/18
U.S. Cl. 333—164 5 Claims

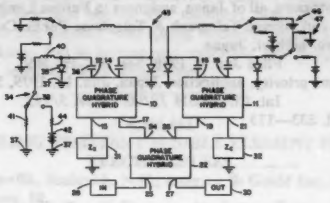
1. A microwave phase modulator having in combination at least three hybrid junctions comprising:

(a) first and second hybrid junctions of the phase quadrature type each having two pairs of conjugate ports;

(b) a switchable impedance terminating each port of one pair of conjugate ports of each of said first and second hybrid junctions;

(c) a third hybrid junction having a first port connected to one of the remaining ports of said first hybrid junction, a second port connected to one of the remaining ports of said second hybrid junction a third port and a fourth port;

(d) an input terminal connected to said third port of said third hybrid junction; and,



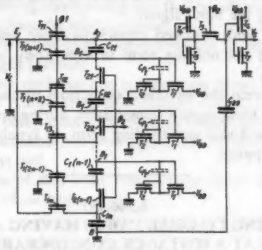
(e) an output terminal connected to said fourth port of said third hybrid junction.

4,366,455

SWITCHED-CAPACITY AMPLIFIER, SWITCHED-CAPACITY FILTER AND CHARGE-TRANSFER FILTER COMPRISING SUCH AN AMPLIFIER

Jean L. Berger, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Nov. 5, 1980, Ser. No. 204,177
Claims priority, application France, Nov. 9, 1979, 79 27713
Int. Cl.³ H03H 11/04, 17/06, 19/00
U.S. Cl. 333—165 8 Claims



1. A circuit having a plurality of integrated capacities comprising

(a) a semiconductor substrate of one conductivity type;

(b) a layer of silica on said substrate;

(c) each of said capacities comprising,

(i) an upper and a lower layer of polycrystalline silicon integrated in said silica and parallel to the substrate;

(ii) two layers of aluminum formed on the silica and insulated from each other, and each being connected to one of the polycrystalline layers respectively; and the plates of each integrated capacity being formed by an aluminum layer and its respective polycrystalline silicon layer; and a terminal, designated B1, being associated with the plate of the capacity comprising the lower layer of polycrystalline silicon;

(d) one of said integrated capacities having its B1 terminal connected to ground;

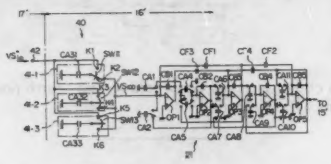
(e) a zone of opposite conductivity type at the semiconductor silica interface facing said polycrystalline silicon layers of at least another of said integrated capacities; and

(f) a voltage follower stage having one control terminal connected to said B1 terminal of said other integrated capacity and the other control terminal connected to said zone of said other integrated capacity; whereby said circuit is a switched capacity amplifier.

4,366,456
SWITCHED-CAPACITOR FILTER

Norio Ueno, Kawasaki; Seiji Kato, Yamato, and Atsushi Iwata, Tokorozawa, all of Japan, assignors to Fujitsu Limited, Kawasaki and Nippon Telegraph & Telephone Public Corporation, Tokyo, both of, Japan

Filed Jun. 4, 1980, Ser. No. 156,389
Claims priority, application Japan, Jun. 14, 1979, 54/74861
Int. Cl.³ H03H *19/00;* H03K *5/153*
U.S. Cl. 333—173 13 Claims



1. A signal converter for receiving a succession of input signals and converting same for transfer to a switched capacitor filter, said converter being driven by constant frequency clock pulses and comprising:

a plurality of switched capacitors connected in parallel with each other, each said switched capacitor comprising a capacitor and associated switching means connected in series,

wherein each of the switched capacitors receives the same successive input signals to be transferred, each of said input signals comprising both a holding term for transferring the input signal and a non-holding term for not transferring the input signal,

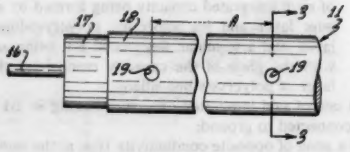
wherein said switched capacitors store said input signals during the holding term in synchrony with said clock pulses,

and wherein the switched capacitors discharge respective stored input signals sequentially, during both said holding term and said non-holding term, in synchrony with said clock pulses.

4,366,457
RADIATING COAXIAL CABLE HAVING APERTURES SPACED AT A DISTANCE CONSIDERABLY LARGER THAN A WAVELENGTH

Udo Bode, Langenhagen; Paul Thiele, Laatzen; Günter Möhring, and Helmut Hildebrand, both of Langenhagen, all of Fed. Rep. of Germany, assignors to Kabel- u. Metallwerke Gutehoffnungshutte AG, Hanover, Fed. Rep. of Germany

Filed Feb. 4, 1981, Ser. No. 231,313
Claims priority, application Fed. Rep. of Germany, Feb. 9, 1980, 3004882
Int. Cl.³ H01P *3/06*
U.S. Cl. 333—237 5 Claims



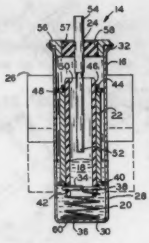
1. A transmission system which includes a source of h-f signals and a coaxial cable, the h-f signals having a particular carrier frequency, the cable being comprised of an inner conductor, an outer conductor coaxial to the inner conductor, and a dielectric spacer means in between, the carrier frequency signals as propagating through the cable having a particular wavelength, the improvement comprising:

a plurality of apertures in the outer conductor being spaced in axial direction at distances, each being considerably larger than the particular wavelength, for establishing spaced apart feed points for surface waves traveling along said outer conductor.

4,366,458
MERCURY DISPLACEMENT RELAY

George H. Elenbaas, 25526 N. Shore Dr., Elkhart, Ind. 46514

Filed Dec. 3, 1981, Ser. No. 327,243
Int. Cl.³ H01H *29/16*
U.S. Cl. 335—52 12 Claims



1. A mercury displacement relay comprising:

a first electrode member containing a body of mercury therein,

a second electrode member being received and secured within said first electrode member, said second electrode member having a portion thereof in contact with said mercury body, said electrodes being insulated one from the other,

a displacement plunger having a first position within said first electrode member wherein a first length of said displacement plunger is submerged in said mercury body, and being movable to a second position within said first electrode member higher than said first position wherein a second length shorter than said first length of said displacement plunger is submerged in said mercury body, said displacement plunger first and second lengths having a common submerged portion,

a spring having opposite ends and being submerged within said mercury body, a first one of said ends being attached to said displacement plunger common portion submerged in said mercury body,

means submerged in said mercury body for securing an opposite end of said spring to a portion of said first electrode member in contact with said mercury body so that said displacement plunger is movably suspended in said first position by said spring, and

coil means in proximity to said first electrode member for moving said displacement plunger from said first position to said second position upon being energized, whereby said mercury body is displaced downwardly upon said displacement plunger moving from said first to said second position, thereby disengaging said second electrode member portion from contact with said mercury body.

4,366,459
MINIATURE MAGNETIC LATCH RELAY

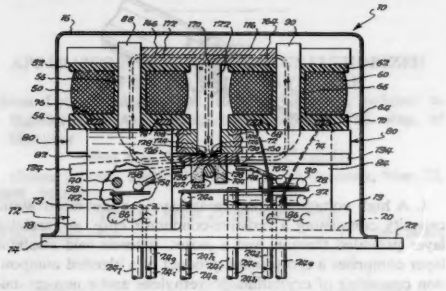
Jack J. Vitola, Simsbury, Conn., assignor to Hi-G Incorporated, Windsor Locks, Conn.

Filed Jul. 9, 1981, Ser. No. 281,652
Int. Cl.³ H01H *51/22*
U.S. Cl. 335—79 26 Claims

1. In a miniature magnetic latch relay including a support header, a permanent magnet, and an armature in pivotal

contact with said magnet for movement between two stable positions in response to selective energization of two electromagnetic coils, the improvement comprising:

a frame having a main body portion spaced from said header and in close relation to said armature, a pair of spaced-apart pole piece sections of magnetic material in said main body portion and operatively associated with said armature, a pair of spaced-apart supporting legs extending from said main body portion toward said header and fixed to said header, a pair of core sections of magnetic material



extending from said main body portion in a direction away from said header through said coils and into magnetic and mechanical coupling relation with said permanent magnet, an opening in said main body portion through which a portion of said permanent magnet extends for said pivotal contact with said armature, and a barrier in said body portion between said opening and said core and pole piece sections of a material having sufficient reluctance to resist the flow of magnetic flux between said permanent magnet and said main body magnet and said armature.

4,366,460

SPRING ELEMENTS FOR SUPPORTING A SUPERCONDUCTIVE COIL

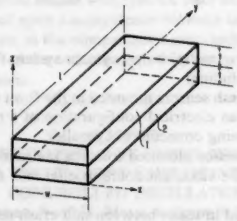
Siegfried Förster, Karlsruhe, and Günter Friesinger, Eggenstein-Leopoldshafen, both of Fed. Rep. of Germany, assignors to Kernforschungszentrum Karlsruhe GmbH, Karlsruhe, Fed. Rep. of Germany

Filed Mar. 13, 1980, Ser. No. 130,121

Claims priority, application Fed. Rep. of Germany, Mar. 16, 1979, 2910354

Int. Cl.³ H01F *1/00*

U.S. Cl. 335—216 **3 Claims**



1. In a superconductive coil assembly having a generally D-shaped housing formed of an inner shell and an outer shell surrounding said inner shell, a generally D-shaped superconductive coil situated in a space defined between said shells; the improvement comprising a plurality of spring elements arranged in a mosaic-like pattern on a surface area on a convex portion of said inner shell between said superconductive coil and said inner shell; said spring elements being in a face-to-face engagement with said inner shell and said superconductive coil; each said spring elements having a first flat member being of a material having a relatively small dilatation and a second flat member being of a material having a relatively large dilatation, said first and second flat members being inseparably bonded to one another; said spring elements having an effective thickness that is greater at a relatively low temperature than at a relatively high temperature.

4,366,461

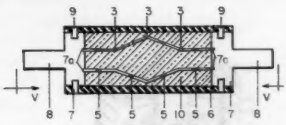
CYCLING RESISTANT FUSIBLE ELEMENT FOR ELECTRIC FUSES

Randa Tawfik, Seabrook, N.H., assignor to Gould Inc., Rolling Meadows, Ill.

Filed Jun. 22, 1981, Ser. No. 276,392

Int. Cl.³ H01H *85/04*

U.S. Cl. 337—159 **3 Claims**



1. A cycling resistant fusible element for electric fuses comprising

(a) a ribbon of copper from which any M-effect overlay is absent;

(b) said ribbon being zig-zag shaped to establish a plurality of contiguous planar sections enclosing obtuse angles with each other and forming straight edges at the loci of intresection of the planes defined by said sections;

(c) said straight edges being non-perforated to maximize the flexual strength thereof;

(d) said sections each having at least one point of reduced cross-section remote from said straight edges;

(e) said ribbon being electroplated with sulfamate of nickel to prevent its oxidation and providing a dull protective layer of high ductility; and

(f) the thickness of said layer being in the order of ten thousandth parts of an inch.

4,366,462

TEMPERATURE SAFETY SWITCH

Walter Hollweck, Nuremberg, Fed. Rep. of Germany, assignor to Inter Control Hermann Köhler Elektrik GmbH & Co. KG, Nuremberg, Fed. Rep. of Germany

Filed Oct. 20, 1980, Ser. No. 198,611

Claims priority, application Fed. Rep. of Germany, Oct. 20, 1979, 2942478

The portion of the term of this patent subsequent to Dec. 22, 1998, has been disclaimed.

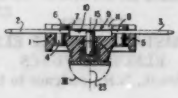
Int. Cl.³ H01H *37/76*

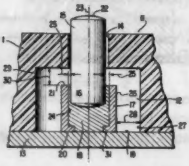
U.S. Cl. 337—409 **4 Claims**

1. In a temperature responsive safety switch including an insulating housing provided with a recess, a thermally conductive heat transfer plate mounted on the housing, a pair of electrically conductive contact elements mounted in the housing and defining an electric current path extending through the housing, one of the contact elements being a spring element which is internally stressed to tend to separate from the other contact element, a body of meltable material mounted on the heat transfer plate, and a force-transmitting plunger displaceably mounted in the housing and having one end in engagement with the body of meltable material and its other end in engagement with the spring element to maintain the contact elements in contact with one another when the body of meltable material has not melted, the improvement comprising:

a hollow cylindrical sleeve member in which said body of meltable material is enclosed and which is oriented with

its longitudinal axis extending in the displacement direction of said plunger, said sleeve member and plunger being so positioned and dimensioned relative to one another that the end of said plunger remote from said contact spring extends into said sleeve member with play in the direction perpendicular to the longitudinal axis of said sleeve member, said sleeve member being mounted in said recess in said housing, and said housing recess being dimensioned to present a space around said sleeve member sufficient to receive the entire mass of said body when the material melts and is forced out of said sleeve member by displacement of said plunger.





4,366,463

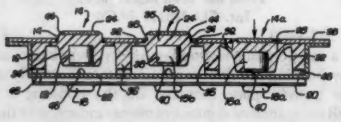
KEYBOARD

Stephen F. Barker, Huntington Beach, Calif., assignor to Cooper Industries, Inc., Houston, Tex.

Filed May 22, 1981, Ser. No. 266,288

Int. Cl.³ H01C *10/00*

U.S. Cl. 338—69 **12 Claims**



1. A keyboard comprising:

a one piece elastomer matrix forming a plurality of independently depressible keys;

a magnet associated with and attached beneath each said depressible key;

a switching means associated with each said depressible key and magnet located beneath said magnet for activiation by the associated magnet when said depressible key is pressed; and

a magnetically permeable means for segregating said matrix from said switching means.

4,366,464

IGNITION CABLES

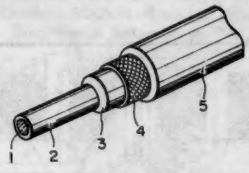
Yoshimi Miyamoto, Aichi; Keiichi Kojima, and Yasuo Toriumi, both of Osaka, all of Japan, assignors to Sumitomo Electric Industries, Osaka and Nippondenso Co., Ltd., Aichi, both of, Japan

Filed Feb. 2, 1981, Ser. No. 230,929

Claims priority, application Japan, Jan. 31, 1980, 55-11443[U]

Int. Cl.³ H01C *3/06*

U.S. Cl. 338—214 **7 Claims**



1. A high voltage ignition cable having a low electrostatic capacity comprising a resistive-conductor core, an insulator layer provided thereon, and a jacket, wherein said insulator layer comprises a cross-linked product of a blended composition consisting of crystalline polyethylene and a non-crystalline olefin polymer.

4,366,465

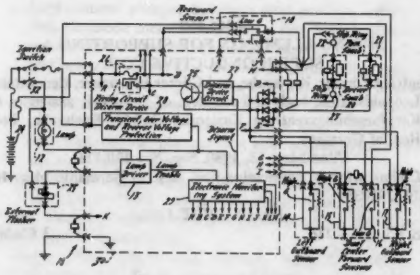
FALSE FAILURE DETECTION PREVENTION IN AN AIR BAG DIAGNOSTIC SYSTEM

Marcello Veneziano, Novi, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Oct. 2, 1981, Ser. No. 307,836

Int. Cl.³ B60R *21/00*

U.S. Cl. 340—52 R **5 Claims**



1. In an air bag restraint deployment system for an automotive vehicle including:

a plurality of crash sensors mounted in the front of the vehicle, each having an electrical configuration of a normally open switch and being connected in parallel;

a deceleration sensor mounted towards the rear of the vehicle and having the electrical configuration of a normally open switch;

means connected in series between said crash sensors and said deceleration sensor for inflating said air bag in response to the concurrent closing of both said sensors;

circuit means for supplying a system voltage across said interconnected deceleration sensor, inflation means and crash sensor;

means for disarming said system by interrupting the circuit means and inhibiting said supply of system voltage across said deceleration sensor, inflation means and said crash sensor;

means connected to said deceleration sensor, said crash sen-

sors, said inflation means, and said disarming means, for monitoring their operating condition, for providing an indication when an operating condition is impaired, and for providing a disarmed signal to said disarming means when a short is detected across any of said crash sensors;

an improvement comprising:

means connected to a junction between said crash sensors and said inflation means, and to said disarming means to receive said disarm signal, and for responsively activating said disarming means only when a short is present across any of said crash sensors.

4,366,466

APPARATUS FOR PREVENTING UNAUTHORIZED STARTING OF A MOTOR VEHICLE

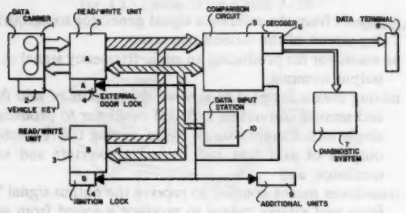
Horst Lutz, Ditzingen, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Mar. 21, 1980, Ser. No. 132,411

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1979, 2911160

Int. Cl.³ B60R *25/00*; G07C *5/08*

U.S. Cl. 340—64 **26 Claims**



1. An arrangement for preventing an unauthorized starting of a motor vehicle, the arrangement including a data carrier with a key adapted to operate at least one of mechanical locks and ignition switch means of the motor vehicle and an evaluating circuit means for providing an output signal if data on the data carrier contains predetermined information, characterized in that the data carrier includes at least one of an unerasable portion containing data reflecting vehicle-related information and an erasable portion containing arbitrary information, the evaluating circuit means includes at least one read/write means for reading the data on the data carrier and for enabling a changing of the information on the erasable portion of the data carrier, and a comparison means for comparing the data read by the read/write means with specific data and for providing an output signal upon a coincidence between the read data and the specific data in the comparator means and for forwarding at least a pair of the vehicle-related information to a vehicle diagnostic system.

4,366,467

TORQUER CURRENT READOUT SYSTEM FOR INERTIAL INSTRUMENT EMPLOYING CURRENT CONTROLLED OSCILLATOR

Glenn F. Cushman, Norfolk, Mass., assignor to Northrop Corporation, Los Angeles, Calif.

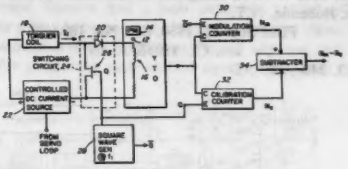
Filed Jan. 16, 1980, Ser. No. 112,417

Int. Cl.³ H03K *13/02*

U.S. Cl. 340—347 AD **20 Claims**

1. In a readout system for an inertial instrument having a torquer coil for interacting magnetically with an inertial element when analog torquer current is passed through the coil, the improvement comprising means for measuring the current flowing through the torquer coil including:

a current-controlled oscillator having a tuning coil connected in series with said torquer coil, and



means responsive to the output of the oscillator for producing a digital output substantially proportional to torquer current.

4,366,468

CHARGE-BALANCED ANALOG-TO-DIGITAL CONVERTER

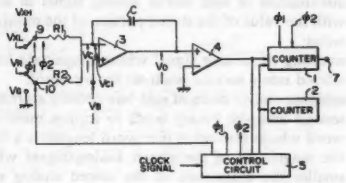
Toshikazu Yoneyama, Tsurugashima, Japan, assignor to Toko, Inc., Tokyo, Japan

Filed Jul. 9, 1980, Ser. No. 166,809

Claims priority, application Japan, Jul. 16, 1979, 54-90123

Int. Cl.³ H03K *13/20*

U.S. Cl. 340—347 NT **2 Claims**

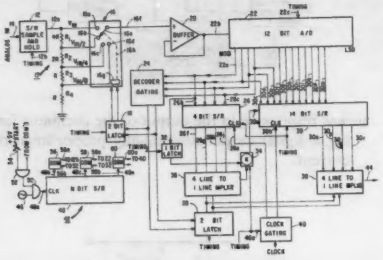


1. A charge-balanced analog-to-digital converter, comprising an integrator including a capacitor, two separate resistors, an operational amplifier, and first and second input terminals connected to the inverting input terminal of said operational amplifier through said two separate resistors respectively; a comparator; first and second counters; and, a control circuit, responsive to the output of said comparator for providing said first input terminal during a first cyclic period, with the lower potential version of an input voltage to be subjected to analog-to-digital conversion and during a second cyclic period, with the higher potential version of said input voltage, and for providing said second input terminal during both the first and second cyclic periods, alternately with a reference voltage for charging said capacitor and a ground potential for causing said capacitor to be discharged; said second counter being arranged to count clock signals occuring during said first and second cyclic periods, for making said first and second cyclic periods equal to each other; said first counter being arranged to count up, during said first cyclic period, those ones of said clock signals which occur when said capacitor is being charged and count down said those ones of said clock signals during said second cyclic periods; the values counted during the first and second periods are deducted so as to be converted to a digital signal in said first counter whereby said unknown input voltage is subjected to analog-to-digital conversion.

4,366,469
COMPANDING ANALOG TO DIGITAL CONVERTER

Stuart R. Michaels, Commack, and Stephen J. Sacks, Woodmere, both of N.Y., assignors to ILC Data Device Corporation, Bohemia, N.Y.

Filed Sep. 22, 1980, Ser. No. 189,648
Int. Cl.³ H03K *13/02*
U.S. Cl. 340—347 AD **7 Claims**



6. A method for converting an analog signal, whose magnitude lies within a predetermined range, into a variable length digital signal comprising the steps of:

temporarily storing said analog signal;

attentuating said analog signal a predetermined amount so that its magnitude is reduced to a value near the low end of said range;

converting the attentuated signal into a multi-bit binary word representing the magnitude of said attentuated signal;

storing a portion of said multi-bit binary word;

examining said stored portion and altering the amount of attentuation of said stored analog signal in accordance with the value of the stored portion of the multi-bit binary word;

converting the analog signal whose magnitude has been so altered into a second multi-bit binary word;

combining one or more of said bits initially stored with said second multi-bit binary word to form a multi-bit binary word whose resolution (i.e. word length) is a function of the magnitude of the stored analog signal wherein the smaller the magnitude of the stored analog signal, the greater the resolution, (i.e. length) of its multi-bit binary word.

4,366,470
CONVERTER

Akira Takanashi, and Yasuhiko Ishigami, both of Mitaka, Japan, assignors to Hitachi, Ltd. and Hitachi Microcomputer Engineering Ltd., both of Tokyo, Japan

Filed Feb. 6, 1981, Ser. No. 232,191
Claims priority, application Japan, Feb. 20, 1980, 55/19011
Int. Cl.³ H03K *13/02*
U.S. Cl. 340—347 DA **15 Claims**

1. An electronic sound generator comprising:

first and second converters, each comprising:

a plurality of input points supplied with voltages of levels different from one another, a single common output point, and a plurality of insulated-gate field effect transistors with their source—drain paths connected between said plurality of input points and said common output point; and

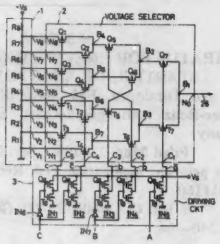
a driving circuit which provides binary signals of a plurality of bits for controlling "on" and "off" states of said plurality of insulated-gate field effect transistors,

wherein each of said plurality of insulated-gate field effect transistors has its conductivity type determined to permit switching each said transistor into the "on" state by a level of a binary signal affording a greater level difference relative to the voltage to be switched by said each transistor;

a reference signal generator having an output terminal for providing a plurality of digital reference signals representative of different sounds;

means for coupling said digital reference signals from said output of said reference signal generator directly to the driving circuit of said first converter;

an inverter coupled between the output terminal of said reference signal generator and the driving circuit of said second converter to provide inverted digital reference



signals from the reference signal generator to said driving circuit of the second converter;

an oscillator for producing an audio frequency signal at an output terminal;

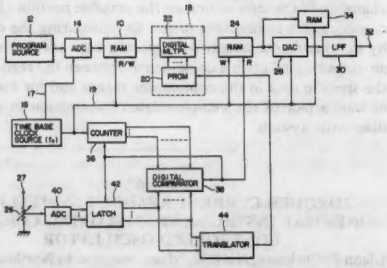
mixing means coupled to receive the outputs of said first and second converters and said oscillator to produce a single mixed output signal V_0 by mixing the respective outputs of said first and second converters and said oscillator; and

transducer means coupled to receive the output signal V_0 from said mixing means to produce a sound from said output signal V_0.

4,366,471
VARIABLE SPEED DIGITAL REPRODUCTION SYSTEM USING A DIGITAL LOW-PASS FILTER

Masao Kasuga, Yokohama, Japan, assignor to Victor Company of Japan, Limited, Yokohama, Japan

Filed Feb. 20, 1981, Ser. No. 236,633
Claims priority, application Japan, Feb. 22, 1980, 55-21178
Int. Cl.³ H03K *13/02*
U.S. Cl. 340—347 DA **8 Claims**



1. A system for reproducing an analog signal which is stored as sampled data in memory means at a variable speed which may differ from the speed at which the analog signal is sampled and recorded into said memory means, comprising:

a clock source for generating clock pulses occurring at a frequency substantially corresponding to the speed at which said sampled data is recorded into said memory means;

a binary counter for counting said clock pulses to generate a first binary output representing the count value of said clock pulses;

means for generating a second binary output representing said variable speed;

means for detecting a match between said first and second binary outputs to reset said binary counter to an initial count value and reading the stored data out of said memory means in response to the occurrence of the detected match;

a digital low-pass filter for eliminating a high frequency component of the analog equivalent of the sampled data, the cut-off frequency of said filter being variable in response to the value of said second binary output so that the cut-off frequency corresponds substantially to one-half of the frequency at which said detected match occurs; and

a digital-to-analog converter for converting a filtered signal from said digital low-pass filter at a constant frequency into a corresponding analog signal.

4,366,472

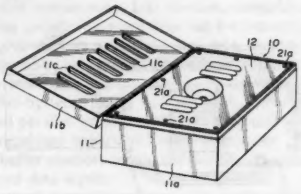
MOTOR ACTUATED BELL ASSEMBLY

Tadashi Ishii, Kunitachi, Japan, assignor to Kobishi Electric Co., Ltd., Tokyo, Japan

Filed Nov. 12, 1980, Ser. No. 206,026

Int. Cl.³ G08B *3/10*; G10K *1/26*

U.S. Cl. 340—392 **7 Claims**



1. A motor actuated bell assembly comprising:

(a) a housing box having a body with an open top and a lid for closing said open top; and

(b) a motor actuated bell, said bell including a base formed with an integral support portion projecting from one surface thereof, a motor driven actuating mechanism mounted on said surface, and a cup-shaped gong mounted on the distal end of said support portion, said motor driven actuating mechanism including hammer means and being accommodated within said gong so that said hammer means is adapted to be brought into striking contact with the inner wall of said gong;

(c) said motor actuated bell being mounted within said housing box, said base being fastened to said box body adjacent to said open top thereof and said motor actuated bell being accommodated within said box body.

4,366,473

CAPACITIVELY COUPLED ELECTROMAGNETIC INTRUSION WARNING SYSTEM

Hiromitsu Inoue, Kyoto; Hiroshi Ohashi, Hirakata, and Yuji Takada, Neyagawa, all of Japan, assignors to Matsushita Electric Works, Ltd., Kadoma, Japan

Filed Dec. 31, 1980, Ser. No. 221,818

Claims priority, application Japan, Jan. 15, 1980, 55-3327; Jan. 15, 1980, 55-3328; Jan. 15, 1980, 55-3330; Jan. 15, 1980, 55-3331; Jul. 28, 1980, 55-102378

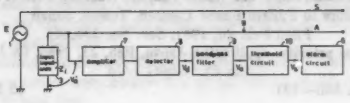
Int. Cl.³ G08B *13/26*

U.S. Cl. 340—562 **7 Claims**

1. An intrusion warning system for indicating the presence of an intruder to a given area comprising: comprising:

an antenna provided around said area insulated from the ground;

an oscillator for feeding an alternating current signal to said antenna, said oscillator including a frequency-switchable oscillation circuit which switches the frequency of said alternating current signal in response to a control signal impressed thereon and a beat detection circuit which detects a beat between said alternating current signal and the harmonics of an A.C. power signal adjacent said system, for producing said control signal in response to an



occurrence of a beat signal of an amplitude in excess of a predetermined level;

coupling impedance means connected between an output terminal of said oscillator and said antenna; and

signal processing means for producing an output signal responding to a change exceeding a predetermined level of the voltage of said alternate current signal on said antenna.

4,366,474

IDENTIFICATION OF ELECTRIC POWER NETWORK PHASES EXPERIENCING DISTURBANCES

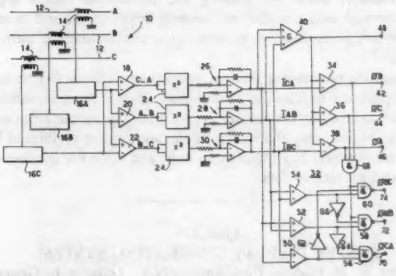
Paul Loewenstein, Paris, France, assignor to Enertec, Montrouge, France

Filed Apr. 13, 1981, Ser. No. 253,969

Claims priority, application France, Apr. 15, 1980, 80 08428

Int. Cl.³ G08B *21/00*

U.S. Cl. 340—658 **5 Claims**



1. A method for identifying which of the phases in a N-phase electric-power transmission network has experienced a fault, comprising the steps of

producing for each phase a first signal representative of the transient variations of an electrical parameter of the respective phase, or of a linear combination of at least two of said parameters;

generating a set of N second signals as the product of two linear combinations of at least N−1 signals selected among said first signals, the sum of all coefficients for each linear combination being nil, each of said second signals being related to a given phase;

integrating with respect to time each of said second signals to produce a set of N third signals associated with respective phases;

generating a fourth signal by combining all of the N first signals in a symmetrical manner with respect to all of said first signals, whereby said fourth signal is independent of the associated phases;

comparing said fourth signal with each of said third signals

to produce comparison signals related to respective phases; and

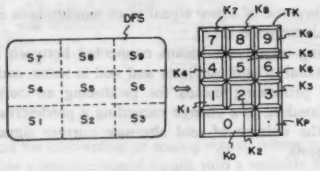
identifying the faulty phase in accordance with the comparison signals thus produced.

4,366,475

IMAGE DISPLAY SYSTEM

Hajimu Kishi, Hino, and Kunio Tanaka, Hachioji both of Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan

Filed Feb. 20, 1981, Ser. No. 236,552
Claims priority, application Japan, Feb. 23, 1980, 55-21816
Int. Cl.³ G09G *1/16*
U.S. Cl. 340—731 **15 Claims**



1. An image display system comprising:

a display device having a picture surface on which an image to be enlarged or reduced is formed, said picture surface being divided into m×n sub-regions arranged in m lines and n columns where m and n are integers;

a plurality of numeral keys bearing different numerical values, said keys for appointing said sub-regions and for generating numerical values;

an operation unit, operatively connected to said plurality of numeral keys, for making the numerical values input through said plurality of numeral keys correspond to said sub-regions and for generating a corresponding output; and

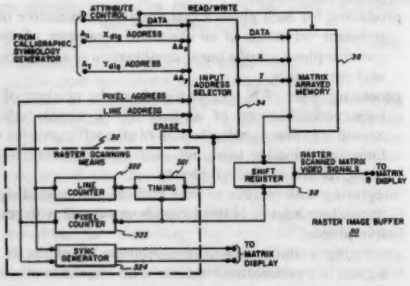
a picture processing device, operatively connected to said operation unit and to said display device, for transmitting to said display device, upon receipt of the output from said operation unit, the image of the sub-region appointed by the numeral key input at an enlarged scale for display on said picture surface.

4,366,476

RASTER DISPLAY GENERATING SYSTEM

Charles W. R. Hickin, Binghamton, N.Y., assignor to General Electric Company, Binghamton, N.Y.

Filed Jul. 3, 1980, Ser. No. 165,804
Int. Cl.³ G09G *1/16*
U.S. Cl. 340—747 **43 Claims**



34. A method for converting calligraphic symbology information into raster scanned symbology for display on a raster scanned matrix display comprising the steps of:

generating a consecutive series of X and Y addresses corresponding to the line segments of the symbol being stroked; and

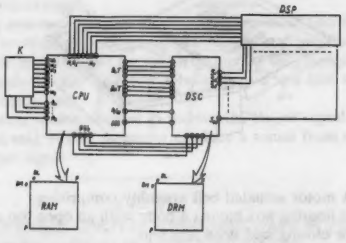
converting this consecutive series of addresses into corresponding pixel locations and storing the pixel locations for refreshing the display image at a later time.

4,366,477

DOT MATRIX TYPE RUNNING DISPLAY PANEL FOR USE IN ELECTRONIC CALCULATORS OR THE LIKE

Tetsuo Iwase, Nara, and Mituhiro Saiji, Kyoto, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 15, 1980, Ser. No. 140,657
Claims priority, application Japan, Apr. 17, 1979, 54-47777
Int. Cl.³ G09G *3/20*
U.S. Cl. 340—792 **2 Claims**



1. An electronic calculator and display system comprising:

a central processing unit;

a dot matrix display arranged in a number of display segments;

display information memory means for storing information to be displayed at fixed locations therein;

display read and write control circuit for storing and reading information in said display information memory means;

display buffer means for reading and decoding the information stored in said display information memory means;

display address decoder means responsive to said central processing unit for selecting addresses within said display information memory from which information is read and decoded by said display buffer means;

segment driver means for converting the decoded information developed by said display buffer means into individual segment signals for application to the individual display segments of said dot matrix display;

information volume detection means for producing a display shift signal when the number of characters of said information to be displayed stored in said display information memory means exceeds the number of display segments;

said display address decoder means and said central processing unit sequentially shifting the addresses of said display information memory means to be read by said display buffer means in response to the production of said display shift signal by said information volume detection means to thereby shift said information across said display to form a running display pattern.

4,366,478

SIGNAL TRANSMITTING AND RECEIVING APPARATUS

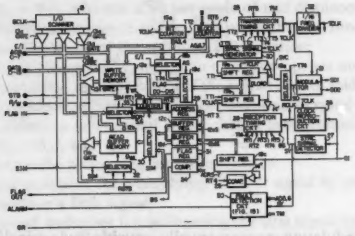
Ikuro Masuda, Hitachi; Hisayoshi Shiraishi, Katsuta; Seiichiro Ogawa, Ichikawa; Shigeo Shiono, Hitachi; Jinichi Sakurai, Mito, and Takeo Yuminaka, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 5, 1981, Ser. No. 222,708

Claims priority, application Japan, Jan. 7, 1980, 55-126

Int. Cl.³ G08C *25/00;* **H04L** *7/00;* **H04O** *9/00*

U.S. Cl. 340—825 **8 Claims**



1. A signal transmitting and receiving apparatus for effecting signal transmission between control units or between a control unit and one or more I/O devices, comprising means for receiving parallel-by-word data and for converting said parallel-by-word data to serial-by-word data, means for transmitting said serial-by-word data, means for receiving transmitted serial-by-word data and for converting said serial-by-word data to parallel-by-word data, and means for transmitting the converted parallel-by-word data, wherein said signal transmitting and receiving apparatus further comprises:

first buffer memory means for storing an incoming parallel-by-word data signal;

first signal transmitting means for reading out the parallel-by-word data signal stored in said first buffer memory means, and for converting said parallel-by-word data signal to a serial-by-word data signal, and for transmitting said converted signal-by-word data signal cyclically;

second buffer memory means for converting an incoming serial-by-word data signal to a parallel-by-word data signal, and for storing said converted parallel-by-word data signal;

second signal transmitting means for reading out the parallel-by-word data signal stored in said second buffer memory means, and for transmitting said read-out parallel-by-word data signal; and

access word length setting means for setting the access word length for the writing/reading operations of said first and second buffer memory means independent of the word length for the data transmission, including at least a bit counter for counting the number of bits which are determined by the access word length and a block counter indicating a block in each of said first and second buffer memory means.

4,366,479

CONTROL INFORMATION COMMUNICATION METHOD AND SYSTEM THROUGH A COMMON SIGNAL TRANSMISSION LINE

Kinji Mori, Sagamihara, and Hirokazu Ihara, Machida, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 6, 1981, Ser. No. 232,006

Claims priority, application Japan, Feb. 8, 1980, 55-13725

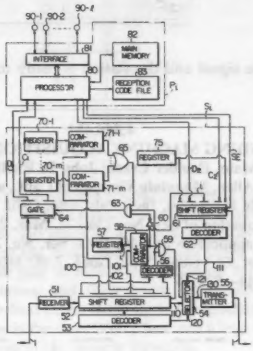
Int. Cl.³ H04Q *5/00*

U.S. Cl. 340—825.05 **23 Claims**

1. A method of communicating control information through a common signal transmission line to which a plurality of stations are coupled, each of said stations having a unique station address and being in turn connected with a respective equipment for control of external terminals connected thereto and for reception of external input signals therefrom, the method comprising:

producing in one of said stations a control data signal containing no portion identifying the unique station address of any other station in response to an external input signal from one of said external terminals connected with the equipment connected to said one station, said control data signal including a content code signal portion representative of one of a plurality of different control operations and a sub-data signal portion made up of data associated with the control operation designated by the content code signal portion;

sending said control data signal from said one station via said common transmission line to all other stations connected to said line;



storing in each of said stations a plurality of content codes representative of selected control operations for which its associated equipment is responsible;

receiving at each of said other stations said control data signal sent from said one station via said common transmission line;

comparing in said other stations the content code signal portion of said received control data signal with each of said plurality of stored content codes to determine whether any one of said stored content codes is concurrent with said content code signal portion; and

producing in the equipments connected to said other stations an instruction signal, only when a concurrence is determined by said comparison, for effecting control defined by the control data formed by the concurrent content code data signal portion and the sub-data signal portion of said received control data signal.

4,366,480

DEMAND DRIVEN ACCESS MECHANISM

David A. Van Hatten, New Brighton, Minn., assignor to Control Data Corporation, Minneapolis, Minn.

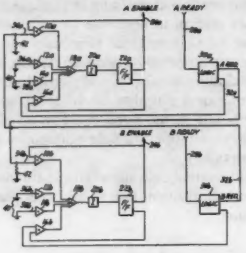
Filed Jun. 15, 1981, Ser. No. 273,897

Int. Cl.³ H04Q *3/00*

U.S. Cl. 340—825.51 **12 Claims**

1. A demand driven access mechanism for enabling a station to seize use of a communication channel shared with one or more other stations, said mechanism comprising: first logic means responsive to a signal from said station for producing a station request signal if the station is either ready to seize use of the channel or is using the channel and for producing a station not-request signal if the station is neither ready to seize use of the channel nor is using the channel; second logic means for producing either an enable signal to said station or a not-enable signal, said second logic means being responsive to the station's enable signal and a request signal from a second station or to the stations's not-request signal and the stations's not-enable signal to produce said enable signal whenever the station is enabled by its respective second logic means and no request

signal is present from the second station's first logic means or whenever the station's second logic means is not producing



said enable signal and the station is ready to seize use of the channel.

4,366,481

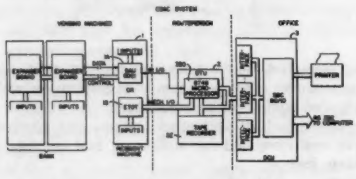
VENDING MACHINE ACQUISITION SYSTEM

David T. Main, Boulder Creek; John B. Riddle, Palo Alto, and Rod H. Allen, Mountain View, all of Calif., assignors to Micro Magnetic Industries, Inc., Palo Alto, Calif.

Continuation of Ser. No. 134,271, Mar. 26, 1980. This application Jul. 10, 1981, Ser. No. 282,076

Int. Cl.³ G06K *5/02*; G06F *7/00*; H04Q *9/00*

U.S. Cl. 340—825.54 **7 Claims**



1. A data collection system for use with one or more vending machines of the type which dispense either products or services for money received and which have an access door and a money box, the data collection system comprising

separate data acquisition means resident in a plurality of vending machines for sensing and counting money received and the products or services dispensed for each vending machine and for summarizing said data, the data acquisition means including memory means for storing the summarized data; and

data transfer means for selectively interrogating a plurality of said data acquisition means to receive the summarized data from each of said data acquisition means, said data transfer means having means for supplying an identification code number signal, by which said data transfer means identifies itself, to each data acquisition means interrogated by said data transfer means, and wherein

the data acquisition means stores the identification code number as part of the summarized data in the memory means.

4,366,482

TRANSMITTER WITH BUZZER

Paul A. Remes, Neenah, Wis., and Brian L. Jorgensen, Westminster, Calif., assignors to Overhead Door Corporation, Dallas, Tex.

Filed Jan. 23, 1981, Ser. No. 228,539

Int. Cl.³ G08C *19/00*

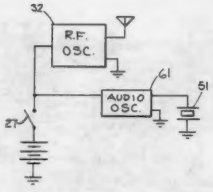
U.S. Cl. 340—825.69 **8 Claims**

6. In a radio transmitter-receiver garage door opener system including:

a radio receiver responsive to reception of a preselected radio signal for moving a garage door between its opened and closed positions;

a portable hand-held transmitter manually actuable for causing said receiver to move said door by radio transmission of said preselected radio signal, said transmitter incorporating

a radio frequency oscillator for transmitting a radio signal to said receiver;



modulating means manually actuable to electrically energize said radio frequency oscillator to transmit said radio frequency signal; and

the improvement comprising an audio means connected in parallel with said radio frequency oscillator and responsive to actuation of said manually actuable modulating means for simultaneously producing a corresponding audio signal audible to a person holding said portable transmitter.

4,366,483

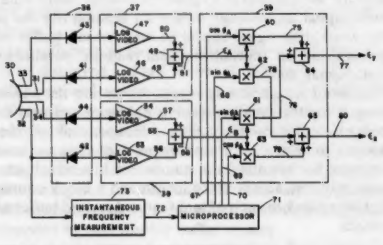
RECEIVER AND METHOD FOR USE WITH A FOUR-ARM SPIRAL ANTENNA

Gary L. Hagedon, Alta Loma, and John T. Brustad, Claremont, both of Calif., assignors to General Dynamics, Pomona Division, Pomona, Calif.

Filed Nov. 3, 1980, Ser. No. 203,215

Int. Cl.³ G01S *3/32*; H01Q *1/36*

U.S. Cl. 343—113 R **4 Claims**



1. A receiver for locating a source of RF radiation received by a four-arm spiral antenna having an angular measurement frame normal to the antenna axis, comprising

detection means for detecting signals received from each of the spiral arms in response to receipt of RF radiation by the antenna;

first comparison means for comparing signals detected from a first opposite pair of said spiral arms to produce a first signal that is proportional to a first function of the frequency of the received RF radiation and the angular displacement of the radiation source in the measurement frame;

second comparison means for comparing signals detected from the remaining opposite pair of said spiral arms to

produce a second signal that is proportional to a second function of the frequency of the received RF radiation and the angular displacement of the radiation source in the measurement frame; and

processing means for processing the first and second signals to produce third and fourth signals that are proportional to said angular displacement and independent of the frequency of the received RF radiation;

wherein the first comparison means comprises means for comparing the logarithms of the amplitudes of said signals detected from the first opposite pair of spiral arms to produce a said first signal that is proportional to sin $(\phi_T+\phi_A)$, wherein ϕ_T is the angle of said displacement of the radiation source and ϕ_A is an angle that is a function of the frequency of the received RF radiation;

wherein the second comparison means comprises means for comparing the logarithms of the amplitudes of said signals detected from the remaining opposite pair of spiral arms to produce a said second signal that is proportional to cos $(\phi_T+\phi_A)$; and

wherein the processing means comprises

a first multiplier for multiplying the first signal by cos ϕ_A to produce a fifth signal;

a second multiplier for multiplying the first signal by sin ϕ_A to produce a sixth signal;

a third multiplier for multiplying the second signal by $-\sin \phi_A$ to produce a seventh signal;

a fourth multiplier for multiplying the second signal by cos ϕ_A to produce an eighth signal;

a first summing means for adding the fifth and seventh signals to produce the third signal, wherein the third signal is proportional to sin ϕ_T; and

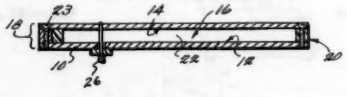
a second summing means for adding the sixth and eighth signals to produce the fourth signal, wherein the fourth signal is proportional to cos ϕ_T.

4,366,484

TEMPERATURE COMPENSATED RADIO FREQUENCY ANTENNA AND METHODS RELATED THERETO

Michael A. Weiss, Nederland, and Robert E. Munson, Boulder, both of Colo., assignors to Ball Corporation, Muncie, Ind.

Continuation of Ser. No. 974,423, Dec. 29, 1978, abandoned.
This application Mar. 23, 1981, Ser. No. 246,325
Int. Cl.³ H01Q *1/38*
U.S. Cl. 343—700 MS **27 Claims**



1. A temperature compensated radio frequency microstrip antenna comprising:

a metallic resonant electrical microstrip radiation patch conductor disposed above a ground plane to define at least one radiating aperture between an edge of said patch and said ground plane, said patch conductor having a nominal resonant frequency and a nominal resonant dimension which changes with temperature changes so as to change said nominal resonant frequency in a first direction, and

dielectric material partly filling the volume under said resonant patch conductor and above said ground plane and having an effective dielectric constant which changes with temperature changes so as to change said nominal resonant frequency in a second direction opposite to said first direction,

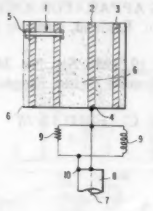
said dielectric material comprising solid material filling only a predetermined fractional portion of said volume so as to substantially reduce the net change in said nominal resonant frequency with respect to temperature.

4,366,485

CONCENTRIC TUBE ANTENNA ENCASED IN DIELECTRIC

Alec J. Hodgkinson, Johannesburg, South Africa, assignor to Z.S. Electroniques (Proprietary) Limited, Johannesburg, South Africa

Filed Nov. 5, 1980, Ser. No. 204,673
Claims priority, application South Africa, Nov. 15, 1979, 79/6143
Int. Cl.³ H01Q *9/26, 1/40*
U.S. Cl. 343—791 **6 Claims**



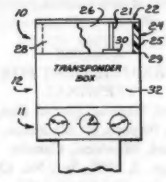
1. An antenna comprising: a conductor formed by two tubular sections, one of said tubular sections being of smaller diameter than the other and being located concentrically within the other, the ends of the two tubular sections being electrically connected at one pair of ends thereof remote from the feed point of the antenna, and there being a directional coupler connected to the feed point, the coupler being adapted to have a low attenuation in the direction of feed and a high attenuation of reflected waves in the reverse direction.

4,366,486

LOW PROFILE ANTENNA FOR DATA TRANSPONDERS

Peter P. Toulios, Oakbrook, Ill., assignor to Northern Illinois Gas Company, Aurora, Ill.

Filed Mar. 16, 1981, Ser. No. 244,017
Int. Cl.³ H01Q *1/36*
U.S. Cl. 343—899 **11 Claims**



1. In a data readout system for transmitting data from a data collection source at a first location to a data receiving means at a second location, a data transmitting unit at the data collection source for generating data signals representing data to be transmitted for radiation to the receiving means, said data transmitting unit comprising: signal generating means for generating said data signals; an enclosure for housing said signal generating means and having a generally planar upper surface, at least a portion of said enclosure, including said planar surface, being of an electrically conducting material; and a low profile antenna mounted on said planar surface, said antenna and said enclosure effectively acting as first and second wings of an asymmetrical dipole antenna system with both said antenna and said enclosure contributing to radiation of said data signals to said receiving means, said antenna including a current carrying conductor of a length h, loading means including a generally rectangular load plate of an electrically conducting material, and support means for supporting said load plate in a plane extending horizontally at a height above said planar

surface, the length and width of said load plate corresponding to the length and width of said planar surface, said current conductor being supported in a vertical orientation between said planar surface and said load plate and having one end electrically connected to said load plate and its other end electrically connected to a signal output of said signal generating means, and the sum of the effective length L of the load plate and the length h of the conductor corresponding generally to a quarter wavelength of a signal at a resonance frequency for the antenna.

4,366,487

JET PRINTING APPARATUS AND METHOD

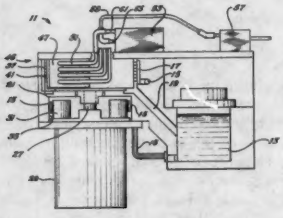
Allan R. Willett, Ipsden, England, assignor to Printos B.V. of N.L., Netherlands

Filed Mar. 19, 1981, Ser. No. 245,525

Claims priority, application United Kingdom, Mar. 24, 1980, 8009864

Int. Cl.³ G01D *15/18*

U.S. Cl. 346—1.1 **12 Claims**



12. A jet printing method for applying a printing medium to a moving substrate, comprising the steps of:

providing a reservoir for storing printing medium;

passing a perforate member having at least one surface with perforations through said medium in said reservoir so that said medium enters said perforations;

effecting relative movement of said perforate member past a printing station; and

employing a gas jet at said printing station to eject said medium contained in said perforations onto said substrate.

4,366,488

READ/WRITE ARRANGEMENT FOR A MAGNETIC TERMINAL

William D. Westwood, Nepean; Steven Kos, Kanata, and Herman W. Willemsen, Nepean, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Apr. 2, 1980, Ser. No. 136,533

Int. Cl.³ G11B *5/02*

U.S. Cl. 346—74.3 **6 Claims**

1. A terminal comprising:

writing means for recording information on magnetic particle oriented paper;

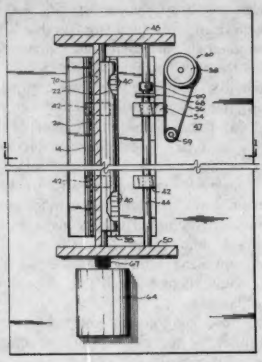
elongate erasing means for erasing information recorded on the paper;

means for advancing a sheet of said magnetic particle oriented paper past the writing means and the erasing means;

means for reciprocating said writing means in a direction perpendicular to the direction of advance of said sheet and parallel to the plane of the sheet at the writing means; and

means for longitudinally reciprocating said erasing means in a direction perpendicular to the direction of advance of the sheet and parallel to the plane of the sheet at the erasing means;

wherein said erasing means is spaced from the writing means and comprises a plurality of permanent magnets arranged to produce at a portion of the paper adjacent to the erasing means a magnetic field having a predominant component in a plane parallel to the paper, a flux pattern of the field being such that on reciprocation of said erasing means, said portion of paper is subjected to a rotating magnetic field substantially in the plane of the paper, the field being sufficiently



intense to reorient magnetic particles contained within the paper so that north-south polar axes thereof are parallel to the plane of the paper.

4,366,489

THERMAL RECORDING APPARATUS

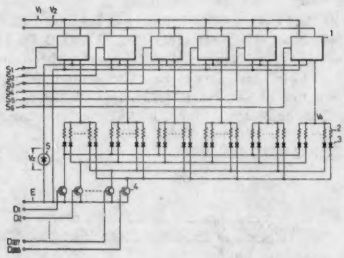
Shingo Yamaguchi, Atsugi, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Jan. 23, 1981, Ser. No. 227,963

Claims priority, application Japan, Feb. 6, 1980, 55-12383

Int. Cl.³ G01D *15/10*; H05B *3/00*

U.S. Cl. 346—76 PH **5 Claims**



1. A thermal recording apparatus for forming images on a thermosensitive record paper by selectively applying electric power to a plurality of thermal resistors arranged in a recording head in accordance with image information to be recorded, comprising:

said plurality of thermal resistors divided into a predetermined number of groups;

a predetermined number of transistor means each including at least one transistor for independently supplying power to respective groups of said thermal resistors; and

a clamping circuit for maintaining the base voltage of said transistors at a predetermined constant voltage when said thermal transistors are controlled so as to be in an electrically conductive state;

wherein said predetermined number of transistor means are actuated in a time-divisional manner so as to supply a predetermined, constant electric power from a non-regulated D.C. power source selected of said plurality of thermal resistors in accordance with the image information to be recorded.

4,366,490

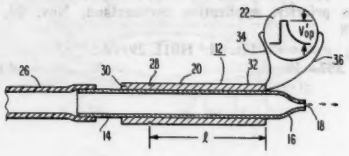
METHOD AND APPARATUS FOR TUNING INK JETS

William J. DeBonte, Kent, and Karen Lynch, New Milford, both of Conn., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 186,261, Sep. 11, 1980, abandoned. This application Feb. 19, 1982, Ser. No. 350,191

Int. Cl.[3] G01D *15/18*

U.S. Cl. 346—140 R 18 Claims



1. An ink jet apparatus comprising:

transducer means of predetermined length;

an ink chamber of fixed dimensions including a drop-emitting orifice in communication with said transducer;

energizing means coupled to said transducer means for energizing said transducer means by applying an operating signal thereto, whereby said chamber expands and contracts in response to the state of energization of said transducer means, for causing an ink drop to be emitted from said orifice; and

said transducer means including means for deactivating a portion of said transducer means, for effectively changing the length thereof, thereby permitting said transducer means to be matched to said operating signal for tuning said ink jet.

4,366,491

ELECTROGRAPHIC IMAGING SYSTEM

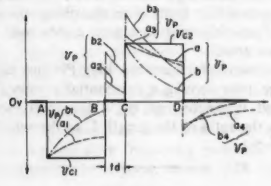
Masaru Ohnishi, and Syuji Iwata, both c/o Mitsubishi Denki Kabushiki Kaisha Ohyokiki Kenkyusho, No. 80, Aza-Nakano, Minamishimizu, Amagasaki-shi, Hyogo-ken, Japan

Filed Oct. 3, 1979, Ser. No. 81,488

Claims priority, application Japan, Nov. 21, 1978, 53-144495; Dec. 29, 1978, 53-161620

Int. Cl.[3] G03G *15/44*

U.S. Cl. 346—155 6 Claims



1. In an electrographic imaging system for driving a single surface control electrostatic recording head having recording stylus electrodes arranged in groups with respective stylus electrodes of each group connected in parallel and control electrodes arranged adjacent respective groups of stylus electrodes so as to form electrostatic latent images on a dielectric layer of a record medium contacting said recording head, an improvement characterized in that a first control pulse voltage is applied to selected control electrodes adjacent a selected respective group of stylus electrodes; and then a second control pulse voltage having a different polarity is applied to said selected control electrodes and simultaneously, a recording pulse voltage having the same polarity as the polarity of the first control pulse voltage is applied to said selected respective group of stylus electrodes.

4,366,492

SEMICONDUCTOR LASER DEVICE

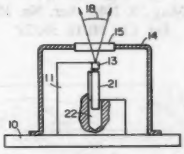
Takashi Kitamura, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 6, 1980, Ser. No. 147,173

Claims priority, application Japan, May 8, 1979, 54-56793

Int. Cl.[3] G01D *15/14*; H01S *3/19*

U.S. Cl. 346—160 19 Claims



1. A semiconductor laser device, comprising:

(a) semiconductor laser means for generating a front laser beam and a rear laser beam;

(b) a casing for covering said semiconductor laser means and provided with an optical window for transmitting the front laser beam generated by said semiconductor laser means therethrough; and

(c) antireflecting means coated on at least a portion of the internal walls of said casing in order to prevent the rear laser beam generated by said semiconductor laser means from being reflected to and transmitted through said optical for emission from said casing window.

4,366,493

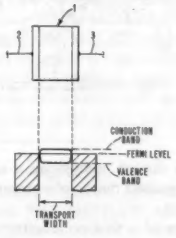
SEMICONDUCTOR BALLISTIC TRANSPORT DEVICE

Norman Braslau, Katonah; John L. Freeouf, Cortlandt; George D. Pettit, Mahopac; Hans S. Rupprecht, Yorktown Heights, and Jerry M. Woodall, Bedford Hills, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 20, 1980, Ser. No. 161,611

Int. Cl.[3] H01L *27/12*

U.S. Cl. 357—4 14 Claims



1. Semiconductor signal translating apparatus comprising in combination:

a semiconductor body having at least first and second essentially parallel electrode faces, said body having;

a distance between said faces being more than a distance permitting quantum mechanical tunnelling and less than the mean-free carrier path length of the material of said body;

a doping density less than that which provides a high probability of carrier collisions but sufficient for practical device current flow;

a barrier free ohmic contact having a resistance of less

than 10^{-6} ohm cm^2 to each of said first and second electrode faces, and

means providing an impressed voltage across said body of a magnitude sufficient for current flow but less than the magnitude sufficient to produce an intervalley carrier transition.

4,366,494

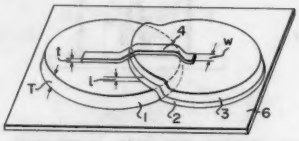
JOSEPHSON JUNCTION AND A METHOD OF MAKING THE SAME

Hiroshi Ohta, Wako, Japan, assignor to Rikagaku Kenkyusho and Science and Technology Agency, both of Tokyo, Japan

Filed May 20, 1980, Ser. No. 151,693

Int. Cl.³ H01L *39/22*

U.S. Cl. 357—5 **26 Claims**



1. A superconducting device comprising a laminar body including first and second superconductor layers, an insulative spacer layer therebetween and a conductive junction extending between said first and second superconductor layers and across the thickness of the insulative spacer layer and said first and second superconductor layers being offset and superposed with respect to each other such that only a portion of each of said superconductor layers overly each other.

4,366,495

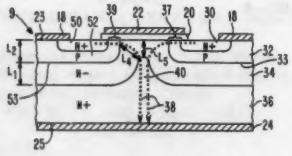
VERTICAL MOSFET WITH REDUCED TURN-ON RESISTANCE

Lawrence A. Goodman, Plainsboro, N.J., and Kenneth P. Smith, Aloha, Oreg., assignors to RCA Corporation, New York, N.Y.

Filed Aug. 6, 1979, Ser. No. 63,809

Int. Cl.³ H01L *29/78*

U.S. Cl. 357—23 **9 Claims**



1. A VDMOS device comprising a semiconductor wafer having first and second major planar surfaces, and including therein:

a source region of a first conductivity type adjacent to a body region of a second conductivity type, both regions intercepting the first major surface,

a high conductivity drain region of the first conductivity type, intercepting the second major surface, and

an extended drain region of the first conductivity type adjacently disposed between the high conductivity drain and body regions, and intercepting the first major surface so as to define a channel region in an area of the body region at the first surface, said extended drain region being of lower conductivity than the high conductivity drain region and providing substantially uniform spacing between the body and high conductivity drain regions, the high conductivity drain region comprising a projection extending toward the first surface in an area where the extended drain intercepts the first surface.

4,366,496

OPTICALLY ACTIVATABLE SEMICONDUCTOR COMPONENT

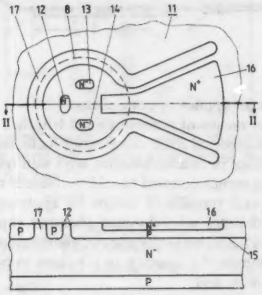
Andre Jaecklin, Ennetbaden, Switzerland, assignor to BBC Brown, Boveri & Company Limited, Baden, Switzerland

Continuation of Ser. No. 85,410, Oct. 16, 1979, abandoned. This application Mar. 10, 1981, Ser. No. 242,289

Claims priority, application Switzerland, Nov. 24, 1978, 12048/78

Int. Cl.³ H01L *29/74*

U.S. Cl. 357—38 **4 Claims**



1. A light activatable thyristor formed of four zones of alternating conductivity types including a cathode emitter zone, a cathode base zone, an anode base zone and an anode zone, respectively, wherein said cathode and anode zones respectively face cathode side and anode side surfaces, wherein said cathode base zone and said anode base zone define a forward blocking PN-junction therebetween upon application of a biasing voltage from a biasing source, said forward blocking PN-junction emerging on said cathode side surface and being exposed to activating light from a light source, comprising:

said anode base zone penetrating said cathode base zone and emerging to said cathode side surface through said cathode base zone such that said forward blocking junction formed therebetween on said cathode side surface exhibits at least one closed geometric form, and said at least one closed geometric form circumscribing on said cathode side surface only said emerging anode base zone free of any other zone;

said light-sensitive forward blocking PN-junction defining at least one tube having a substantially smooth circumference and characterized by a length L and width B, wherein the ratio of the length L to the width B is less or equal to 5:1.

4,366,497

COOLING CAPSULE FOR DISC-SHAPED SEMICONDUCTOR COMPONENTS

Harry Block, and Rudolf Wiesenbacher, both of Erlangen, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jun. 12, 1980, Ser. No. 158,713

Claims priority, application Fed. Rep. of Germany, Jun. 29, 1979, 2926342

Int. Cl.³ H01L *3/00*

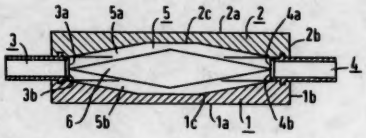
U.S. Cl. 357—82 **9 Claims**

1. A cooling capsule for disc-shaped semiconductor components comprising:

two heat conductive cover dishes, each cover dish having a substantially flat outer face for making generally conform-

ing, thermally conductive connection to at least on semiconductor component, each dish having a side wall and containing a single recess, the side wall of one cover dish joined to the side wall of the other cover dish in a liquid-tight manner to form a side wall of the capsule, joining the recesses to provide a cavity in the capsule;

an inlet opening and an outlet opening in the side wall of the capsule to permit through flow of coolant; and



a solid core positioned in the cavity so as to divide each inlet and each outlet opening in the side wall into separate inlet and outlet openings associated with each recess,

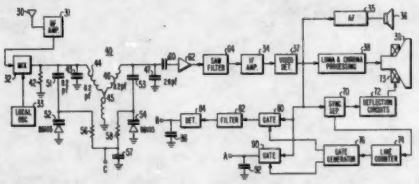
the maximum cross-sectional area of the cavity, taken on a connecting line between the inlet and the outlet openings, being substantially equal to the maximum cross-sectional area of the core.

4,366,498

I.F. RESPONSE CONTROL SYSTEM FOR A TELEVISION RECEIVER

Gerald E. Theriault, Hopewell, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 30, 1981, Ser. No. 258,928
Int. Cl.³ H04N *9/535*
U.S. Cl. 358—38 **8 Claims**



1. In a television receiver, including a source of intermediate frequency television signals containing a picture carrier and a chrominance subcarrier; means, responsive to said intermediate frequency signals, for processing said intermediate frequency signals; and a video detector responsive to said processed intermediate frequency signals for producing baseband video signals including a VIR signal having a chrominance reference bar and a luminance reference level; apparatus for controlling the intermediate frequency passband response of said television receiver in response to said VIR signal, including:

means, operable during a first portion of said VIR signal, for detecting the amplitude of said chrominance reference bar of said VIR signal;

means, operable during a second portion of said VIR signal, for detecting the amplitude of said luminance reference level of said VIR signal;

means, responsive to said detected amplitudes of said chrominance reference bar and said luminance reference level, for producing a control signal indicative of the ratio of said detected signal amplitudes; and

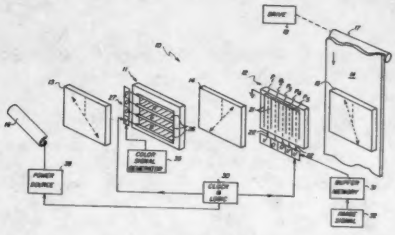
a passband shaping circuit, included within said intermediate frequency signal processing means, and responsive to said control signal for controlling the amplitude versus frequency response characteristic of said intermediate frequency signal processing means as a function of said ratio of said detected signals.

4,366,499

ELECTRONIC COLOR IMAGING APPARATUS HAVING IMPROVED COLOR CONTROL DEVICE

Jose M. Mir, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 29, 1981, Ser. No. 230,096
Int. Cl.³ H04N *1/46*
U.S. Cl. 358—75 **4 Claims**



1. Apparatus adapted for electronic color imaging, said apparatus including:

(a) means defining an imaging zone;

(b) illumination means for directing uniform, multicolor light toward said imaging zone;

(c) pixel exposing means including at least one pixel array located between said illumination means and said imaging zone and comprising a plurality of discreet light valves that are each aligned with a different pixel region across said imaging zone, each of said light valves being discretely activatable electrically to control the passage of light from said illumination means to its respective pixel region;

(d) color control means including a plurality of electro-optic strip modulators located between said illumination means and said imaging zone in optical alignment with said pixel exposing means and being electrically-activatable between first and second states for selectively controlling the passage of light to said imaging zone between different ones of a plurality of different colors; and

(e) addressing means for receiving a color image signal and for selectively activating said pixel exposing means and said color control means so tha the imagewise passage of light through said pixel exposing means is controlled in accordance with the color image information that pertains to the light color then passing said color control means.

4,366,500

ELECTRONIC COLOR IMAGING APPARATUS HAVING INTEGRAL MULTICOLOR ARRAYS

Clark N. Kurtz; Jose M. Mir, both of Rochester, and Jerry R. Varner, Fairport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

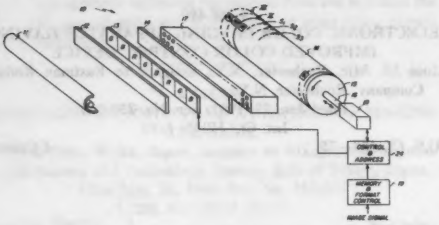
Filed Jan. 29, 1981, Ser. No. 230,098
Int. Cl.³ H04N *1/46*
U.S. Cl. 358—75 **11 Claims**

1. For use in electronic color imaging apparatus of the type having a multicolor light source directed toward an imaging station in which color photosensitive imaging medium is disposed, an improved electro-optic modulator comprising:

(a) a panel of electro-optic material of the type transformable from an isotropic state to a birefringent state in response to application of an electric field;

(b) addressable electrode means disposed on said panel in a

regular pattern defining a plurality of separately-activatable pixel portions within said panel; and



(c) a plurality of filter means respectively of different colors and coupled to different individual pixel portions of said panel.

4,366,501

IMAGE RECORDING SYSTEM

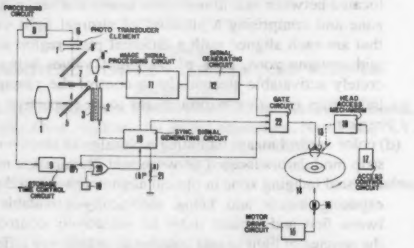
Tokuichi Tsunekawa, Yokohama; Nobuaki Date; Hiroshi Aizawa, both of Kawasaki; Kazuya Hosoe, Machida, and Kazunori Urushibara, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 18, 1979, Ser. No. 31,168

Claims priority, application Japan, Apr. 23, 1978, 53-48010; Apr. 23, 1978, 53-48011

Int. Cl.³ H04N *5/76*; G03B *7/08*

U.S. Cl. 358—310 **3 Claims**



1. An image recording system comprising:

(a) an optical-electronic image transducer having storage capability for storing an optical image as an electrical signal;

(b) release means;

(c) a release signal forming circuit for producing a release signal when said release means is actuated;

(d) an exposure control timer circuit operative in response to said release signal, said timer circuit including a light-receiving element, said timer circuit being arranged for producing signals at time intervals based on the brightness of light received at said light receiving element;

(e) a control circuit coupled to said image transducer, said control circuit being arranged to cause said image transducer to begin a storing operation in response to said release signal, said control circuit being further arranged to have said storing operation stopped in response to a signal of said timer circuit and to have another storing operation commenced so that the storing operation can be carried out in a continuously repeating manner at time intervals defined by said timer circuit;

(f) a recording circuit for recording the optical image stored during a time regulated by said timer circuit; and

(g) a mode control circuit for switching between first and second modes, said recording circuit being arranged to perform a recording operation in a continuously repeating manner every time a signal of said timer circuit is produced in the first mode and to singly perform the recording operation in response to each issue of a signal produced by said timer circuit in the second mode.

4,366,502

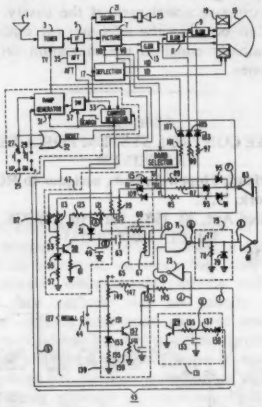
BAR TYPE CHANNEL IDENTIFICATION APPARATUS FOR A TELEVISION RECEIVER

Tony L. Shiu, Taipei, Taiwan, assignor to RCA Corporation, New York, N.Y.

Filed Jul. 1, 1981, Ser. No. 279,452

Int. Cl.³ H04N *5/50*

U.S. Cl. 358—192.1 **11 Claims**



1. In a television including a tuner responsive to the magnitude of a tuning signal for tuning RF carriers to produce an IF signal; search means for changing the magnitude of said tuning signal until an RF carrier corresponding to a television channel has been tuned, said search means generating a search signal having a first level when said tuning voltage is changing and a second level when said tuning signal stops changing after an RF carrier for a television channel has been located; signal processing means responsive to said IF signal for generating at least one video signal; a picture tube responsive to said video signal for generating at least one electron beam; deflection means responsive to said IF signal for generating horizontal and vertical deflection signals for said electron beam; channel identification apparatus comprising:

first means responsive to one of said vertical and horizontal deflection signals and said tuning voltage for controlling said signal processing means to produce a tuning bar on said screen having a position in a direction perpendicular to its length determined by the magnitude of said tuning voltage;

second means responsive to the other one of said deflection signals and to said search signal and coupled to said first means for selectively causing the length of said tuning bar to have a first predetermined value in response to the first level of said search signal and to change by increments at the rate of said other deflection signal to a second predetermined value, different from said first predetermined value, in response to the second level of said search signal.

4,366,503
SOLID STATE IMAGE PICK-UP DEVICE AND ITS CHARGE TRANSFER METHOD

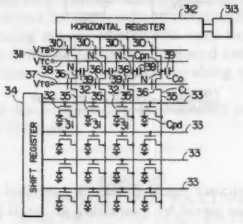
Sumio Terakawa, Ibaraki; Tohru Takamura, Takatsuki; Kenju Horii, Otsu, and Takahiro Yamada, Katano, all of Japan, assignors to Matsushita Electronics Corp. and Matsushita Electric Industrial Co., Ltd., both of Osaka, Japan

Filed Oct. 15, 1980, Ser. No. 197,026

Claims priority, application Japan, Oct. 19, 1979, 54-135590

Int. Cl.³ H04N *3/14*

U.S. Cl. 358—213 **10 Claims**



1. A solid-state image pick-up device comprising:

a plurality of photoelectric converting elements arranged in m-rows and n-columns;

first signal charge transfer means including a vertical MOS-type shift register and a plurality of switch elements for simultaneously transferring optical signal charges stored in a row of said photoelectric converting elements onto a plurality of vertical transfer lines respectively associated with predetermined columns of photoelectric converting elements;

a horizontal shift register for serially transferring therethrough optical signal charges and outputting said optical signal charges, said horizontal shift register being a charge coupled device;

at least one second signal charge transfer means including transfer gates and storage capacitive elements for transferring the optical signal charges transferred to said vertical transfer lines to said horizontal shift register; and,

a signal output device for outputting said optical signal charges transferred to and through said horizontal shift register.

4,366,504
THIN-FILM EL IMAGE DISPLAY PANEL

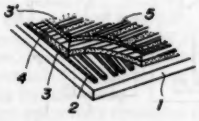
Yoshiharu Kanatani, Tenri, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 948,631, Oct. 3, 1978. This application May 29, 1980, Ser. No. 154,370

Claims priority, application Japan, Oct. 7, 1977, 52-121214; Oct. 7, 1977, 52-122085; Jun. 7, 1978, 53-69656

Int. Cl.³ H04N *3/14*

U.S. Cl. 358—241 **22 Claims**



1. An electroluminescent video display means including an electroluminescent video display panel and means for driving said video display panel in response to a received video signal, said video display panel including a plurality of scanning side electrodes and a plurality of data side electrodes, said means for driving said video display panel comprising:

means associated with said data side electrodes for sampling said received video signal thereby producing a plurality of sampled amplitude modulated video information pulses;

means associated with said data side electrodes for storing each of said plurality sampled amplitude modulated video information pulses;

pulse generating means associated with each of said plurality of data side electrodes for energizing each of said data side electrodes with a voltage pulse, each of said plurality of sampled amplitude modulated video information pulses stored in said means for storing amplitude modulating the voltage pulses to energize the data side electrodes each amplitude modulated voltage pulse energizing said corresponding one of the data side electrodes;

write circuit means for supplying a write voltage pulse to a selected one of said scanning side electrodes, said write voltage pulse being supplied to each of said scanning side electrodes in a line sequential scanning manner; and

refresh circuit means responsive to the completion of the scanning of said scanning side electrodes by said write circuit means for supplying refresh voltage pulses to each of said scanning side electrodes, said refresh voltage pulses having a polarity opposite to the polarity of said write voltage pulse.

4,366,505
INFORMATION FORMING APPARATUS

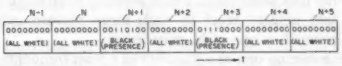
Shin Tsuda, Hasuda; Sadasuke Kurabayashi, Asaka, and Minoru Ogata, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 13, 1979, Ser. No. 75,113

Claims priority, application Japan, Sep. 20, 1978, 53-115652; Sep. 21, 1978, 53-117243

Int. Cl.³ H04N *7/12*

U.S. Cl. 358—260 **8 Claims**



1. An information forming apparatus comprising:

memory means for storing a series of picture element (pixel) signals, each pixel signal including a first signal representative of black information and/or a second signal representative of white information;

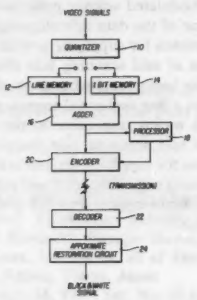
dividing means for dividing said pixel signals stored in said memory means into blocks each composed of plural pixel signals of a predetermined number; and

means for controlling the transmission of the pixel signals stored in said memory means in such a way that when the pixel signals in a block terminate with the first signal, all the pixel signals in a block are modulated and transmitted, and when the pixel signals in a block include the first signal or signals therein and terminate with the second signal, all the pixel signals or the pixel signal existing before the last first signal in the block, if existing, are modulated and transmitted including the last first signal and the second signals of the second signal existing after the last first signal in the block are not transmitted, but only a control signal capable of being distinguished from the second signal to identify the termination of the block is transmitted, and when the pixel signals in a block don't include any first signal in the block, all the second signals as the pixel signals are not transmitted, but only the control signal is transmitted.

4,366,506
PICTURE TRANSFER METHOD AND APPARATUS THEREFOR

Koichi Ejiri, Chiba; Morisumi Kurose, Yokohama, and Mamoru Maeda, Tokyo, all of Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan

Continuation-in-part of Ser. No. 33,977, Apr. 27, 1979. This application Jun. 8, 1981, Ser. No. 271,239
Claims priority, application Japan, May 18, 1978, 53-58236
Int. Cl.[3] H04N *7/12*
U.S. Cl. 358—260 2 Claims



1. A picture transfer method for analyzing a picture into picture cells, forming a plurality of large picture cells, reading out the densities of said picture cells, and restoring said picture therefrom, which comprises the steps of:

dividing said picture into a plurality of small picture cells;

quantizing the density of each of said plurality of small picture cells to obtain a binary density level for each picture cell;

forming a plurality of large picture cells from said plurality of small picture cells, each of said large picture cells being formed from four neighboring small picture cells;

determining the density level of each of said plurality of large picture cells by adding the binary density levels of the four small picture cells forming each large picture cell, said density level of each large picture cell being expressed as one of N gray levels;

determining one or a plurality of n least frequently occurring gray levels among said N gray levels of said large picture cells;

encoding said one or a plurality of n least frequently occurring levels;

compressing said N gray levels into (N−n) gray levels by converting said n least frequently occurring gray levels among said N gray levels into other gray levels among said N gray levels;

encoding said plurality of large picture cells utilizing said (N−n) gray levels;

transmitting said encoded n least frequently occurring gray levels and said plurality of large picture cells;

decoding said transmitted encoded n least frequently occurring gray levels and said plurality of large picture cells to produce a plurality of restored large picture cells having density levels expressed as (N−n) gray levels;

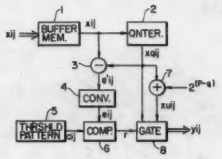
dividing each of said plurality of restored large picture cells into four small restored picture cells;

comparing the density level of each one of said plurality of restored large picture cells to the density levels of each of said plurality of restored large picture cells surrounding said each one of said plurality of restored large picture cells and assigning one of a white and black density level to each of four small restored picture cells contained in said each one of said restored large picture cells based on the result of said comparison.

4,366,507
SHADED PICTURE SIGNAL PROCESSING SYSTEM AND METHOD

Sumio Mori, Asaka, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 19, 1981, Ser. No. 226,281
Claims priority, application Japan, Jan. 17, 1980, 55-4262
Int. Cl.[3] H04N *1/40*
U.S. Cl. 358—283 5 Claims

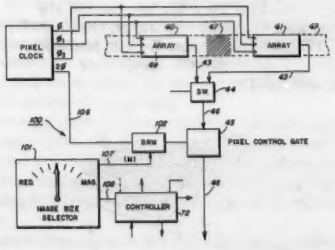


1. A shaded picture signal processing method for obtaining an output picture signal by quantizing an input picture signal having gradations of p bits per picture element into gradation levels of q bits per picture element with said input picture signal formed in a block of m×n picture elements, comprising the steps of: calculating a quantized value x_{qij} by quantizing in q bits per picture element x_{ij} in a spatial address (i, j) in said block; calculating a higher quantization value x_{uij} by adding predetermined quantization step data to said quantized value x_{qij}; calculating a quantization error e_{ij} which is a difference between said picture element x_{ij} and said quantized value x_{qij}, and providing a threshold pattern in m×n matrix form in correspondence to said one block; selecting one of said quantized value x_{qij} and said higher quantization value x_{uij} in response to a comparison of said quantization error e_{ij} with a threshold c_{ij} at a spatial address (i, j) in said threshold pattern to output an output picture signal y_{ij} of q bits per picture element corresponding to said spatial address thereby to reproduce halftones.

4,366,508
IMAGE MAGNIFICATION AND DEMAGNIFICATION SYSTEM

Peter A. Crean, Penfield, N.Y., and Martin A. Agulnek, Sharon, Mass., assignors to Xerox Corporation, Stamford, Conn.

Filed Mar. 7, 1980, Ser. No. 128,018
Int. Cl.[3] H04N *1/04*
U.S. Cl. 358—287 7 Claims



1. In an apparatus for producing image pixels representative of an original image for use in making an output image of selected size, said image pixels being produced at a preset clock rate, said apparatus including scanning means movable at a speed for scanning said original image line-by-line, the combination of:

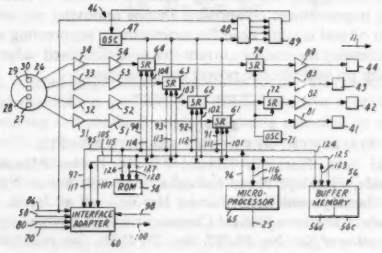
(a) a pixel control gate through which said image pixels are output;
(b) independent clock means for generating control clock pulses at a frequency, said control clock pulses being output to said control gate; and
(c) control means for selectively varying the size of the output image derived from said image pixels, said control means including:
(1) first means for independently controlling the frequency of said control clock pulses output by said clock means whereby to vary the rate at which said image pixels are output by said control gate and independently vary the size of said output image along a first dimension; and
(2) second means for independently controlling the speed of said scanning means whereby to vary the rate at which said lines of image pixels are produced and independently vary the size of said output image along a second dimension,
said second dimension being substantially perpendicular to said first dimension.

4,366,509

FACSIMILE APPARATUS WITH MULTIPLE SCANNING AND PRINTING ELEMENTS

Donald L. Norrell, Woodbury; Kurt H. Petersen, and Ronald F. Schmid, both of White Bear Township, Ramsey County, all of Minn., assignors to Minnesota Mining and Manufacturing Co., Saint Paul, Minn.

Filed Apr. 1, 1981, Ser. No. 249,881
Int. Cl.³ H04N *1/18, 1/40*
U.S. Cl. 358—289 **5 Claims**



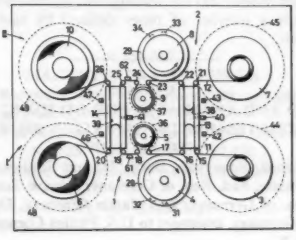
1. A transceiver facsimile machine of the drum-type operable in a scan mode or print mode wherein the drum is rotatable while a scan/print head is moved axially of the drum to provide a scan action when in the scan mode and a print action when in the print mode including:
a plurality of shift register means operable for providing serial/parallel operation for a scan mode of operation and operable for providing parallel/serial operation for a print mode of operation;
a plurality of printing styli carried by the scan/print head each operatively connected to a different one of said shift register means for receiving serial data from said shift register means during the print mode;
scanning means including a plurality of light-to-electric transducers carried by the scan/print head, each operatively connected to a different one of said shift register means for serial entry of data signals from said light-to-electric transducers to a different one of said shift register means during the scan mode;
a buffer memory operatively connected to each of said shift registers for receiving data signals from each of said shift registers in parallel during a scan mode of operation and for receiving serial data signals and providing data signals in parallel to each of said shift registers during a print mode of operation;
a memory for storing programs for a microprocessor; and
a microprocessor operatively connected to said memory, said plurality of shift register means, and said buffer memory for operatively controlling movement of data signals from said plurality of shift means into said buffer memory for each scan revolution of the drum during a scan mode of operation and operatively controlling the entry of serial data signals into said buffer memory and movement of data signals from said buffer memory to said plurality of shift register means for each print revolution of the drum during a print mode of operation.

4,366,510

VIDEO SIGNAL RECORDING AND/OR REPRODUCING DEVICE

Yuji Watanabe, and Hiroyuki Hayashi, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 27, 1979, Ser. No. 24,450
Claims priority, application Japan, Apr. 8, 1978, 53-41617
Int. Cl.³ G11B *21/10, 5/02;* **H04N** *5/78;* **G11B** *15/48*
U.S. Cl. 360—10.2 **7 Claims**



1. A magnetic recording and reproducing device comprising two video tape recording and reproducing parts, each having a tape running system including a supply reel, a rotatable head drum assembly, a take-up reel, a capstan for moving said tape in either longitudinal direction of said tape, a control head in the tape path of each of said tapes over which at least one marginal edge of each of said tapes rides, each of said control heads having upper and lower recording/reproducing portions which are mounted opposite to the upper and lower portions of their respective associated tapes, means for transporting said tapes backward and forward in a selected time interval, means for recording control signals on each of said tapes during a recording control signal mode, means for recording in slant tracks video signals on each of said tapes during a video signal mode, said two tape recording and reproducing parts alternately operating so that one records and reproduces odd fields and the other records and reproduces even fields of the video signal, and said means for transporting said tapes alternately holding one tape stationary while the other tape is driven and during said selected time interval alternately driving said two video tapes in the forward direction for one half of said selected time interval and then alternately driving said two tapes in the backward direction for the remaining half of said selected time inverval, and switching means for switching between said recording control signal mode and said video signal mode.

4,366,511

METHOD AND APPARATUS FOR FORMATTING A MEMORY DISK

Charles Ranalli, Burlington, Mass., assignor to Nixdorf Computer Corporation, Burlington, Mass.

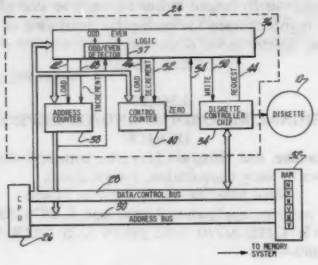
Filed Nov. 3, 1980, Ser. No. 203,191
Int. Cl.³ G11B *5/09*
U.S. Cl. 360—39 **10 Claims**

1. Apparatus for formatting a memory disk (10) comprising:

storage means (32) for storing information and a numerical variable associated therewith;

a control counter (40);

logic means (36) for loading said control counter with said numerical variable; and



controller means (34) for writing said information onto said disk for a number of times defined by said numerical variable.

4,366,512

METHOD AND APPARATUS FOR DIVIDING A TRACK ON A MAGNETIZABLE INFORMATION STORAGE DISC INTO SECTORS

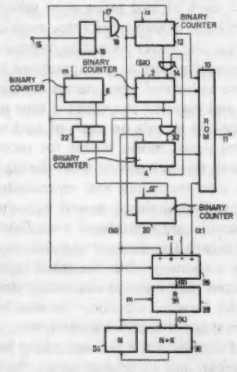
Miloslav Janak, Sunnyvale, Calif.; Helmut Schönwald, Niederschelderhütte, Fed. Rep. of Germany; Eduard Tercic, Siegen, Fed. Rep. of Germany, and Martin Ginsberg, Daaden, Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 10, 1980, Ser. No. 168,843

Claims priority, application Fed. Rep. of Germany, Jun. 20, 1979, 2924781

Int. Cl.³ G11B *5/09*

U.S. Cl. 360—48 **8 Claims**



1. A method of dividing a track on a rotatable, magnetizable information storage disc into m sectors by writing information bytes into said track until said track becomes full and in such manner that m groups of said bytes, each containing n bytes and comprising sector identification information, are written in succession with N further bytes written between each said group and the next to be written, (if present), characterized in that the number r of bytes present in the track between the last said group and the first said group when the track has become full is determined and the track is then refilled with information bytes in such manner that m groups of said bytes, each containing n bytes and comprising sector identification information, are written in succession with N+K further bytes written between each of these groups and the next to be written (if present), where K is equal to $(r-N-j)/m$ if $(r-N-j)/m$ is a whole number, and K is equal to the next whole number below $(r-N-j)/m$ if $(r-N-j)/m$ is not a whole number, j being a positive number or zero.

4,366,513

TAPE RECORDER WITH NOISE BLANKING CIRCUIT

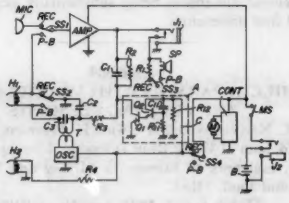
Ken Satoh, and Shunichi Orita, both of Hachioji, Japan, assignors to Olympus Optical Company Limited, Tokyo, Japan

Filed May 22, 1979, Ser. No. 41,315

Claims priority, application Japan, May 23, 1978, 53/69581[U]; May 23, 1978, 53/69582[U]

Int. Cl.³ G11B *5/47*

U.S. Cl. 360—66 **5 Claims**



1. In a tape recorder which supplies an erasing current from an electric power supply source to an erasing head by switching a recording and reproducing switch at the time of recording, the improvement comprising a noise removing circuit at an input of said erasing head for momentarily suppressing and then increasing the erasing current to a predetermined value by switching on said electric power supply source.

4,366,514

MAGNETIC REPRODUCING APPARATUS

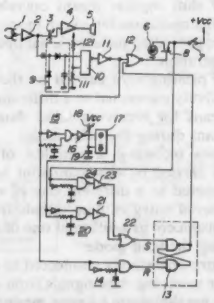
Masaaki Sato, Hachioji; Kazumi Miyaji, Fuchu; Masahide Yoshida, Hachioji; Norio Fukuoka, Hachioji; Kazuo Nakasho, Hachioji, and Kenji Furuta, Hachioji, all of Japan, assignors to Olympus Optical Company Limited, Tokyo, Japan

Continuation of Ser. No. 80,797, Sep. 28, 1979. This application Dec. 22, 1980, Ser. No. 218,692

Claims priority, application Japan, Sep. 28, 1978, 53-119777; Sep. 28, 1978, 53-119778; Sep. 28, 1978, 53-119779

Int. Cl.³ G11B *15/48, 15/18*

U.S. Cl. 360—74.4 **2 Claims**



1. In a magnetic reproducing apparatus having a magnetic tape, a magnetic reproducing head, and a tape drive mechanism and for reproducing the recorded contents of the magnetic tape by the head, the improvement comprising means for

detecting a duration of a reproduced sound from a recorded portion of the tape, means for detecting an interlude or a cease period of a reproduced sound from a non-recorded portion of the tape, and means for controlling a time base of the detected interlude period in proportion to a time base of the detected duration of the reproduced sound, the non-recorded portion of tape being controlled in proportion to the time base of reproduced sound duration so that when an interlude or cease period of reproduced sound exceeds a predetermined value, the time base of the interlude period is shortened by rapid forward running of the tape.

4,366,515

AUTOMATIC HEAD HEIGHT CONTROL APPARATUS

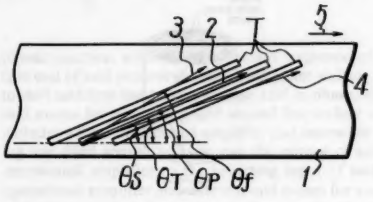
Masayuki Takano; Sadao Hosoi, and Yuichi Matsushita, all of Atsugi, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 13, 1980, Ser. No. 130,168

Claims priority, application Japan, Mar. 15, 1979, 54-30425; Mar. 26, 1979, 54-35334

Int. Cl.³ G11B *21/10, 5/56*

U.S. Cl. 360—77 **13 Claims**



1. A head height control apparatus for at least one magnetic head movable in a closed path during selective operations in recording and playback modes and being mounted on an electrically deflectable element for displacement in a direction transversely of of said path, comprising:

sensing means periodically disposed in facing relation to said head for achieving a transducing relation therebetween and being operative in said recording mode of the head for producing at least one detected signal in response to said transducing relation, which signal contains information in respect to a magnitude and a direction of deviation of any deviation of said at least one magnetic head from a predetermined height in said direction transversely of the path; and

control means responsive to said at least one detected signal for electrically deflecting and electrically deflectable element in opposition to said direction of deviation and in an amount tending to compensate for said deviation and thereby maintain said at least one magnetic head at said predetermined height when in said recording mode.

4,366,516

PRECISION MACHINERY COMPONENT

Masatsugu Ogata; Hideki Asano; Tsuneo Narusawa, all of Hitachi, and Toshikazu Narahara, Tokaimura, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

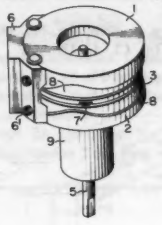
Filed May 27, 1980, Ser. No. 153,007

Claims priority, application Japan, May 29, 1979, 54-66591; May 29, 1979, 54-66592

Int. Cl.³ G11B *15/60, 5/10*

U.S. Cl. 360—84 **23 Claims**

1. In a magnetic tape scanning apparatus comprising a magnetic head assembly containing a magnetic head and a tape guide drum, a base supporting said assembly and a chassis fixing said base, the improvement wherein said tape guide drum is made of a cured thermosetting resin composition which contains a reinforcing material and has a glass transition temperature of 90° C. or higher and further wherein said thermosetting resin composition comprises (A) a thermosetting resin, (B) an inorganic filler and (C) an antistatic agent.



4,366,517

MAGNETIC ERASING HEAD

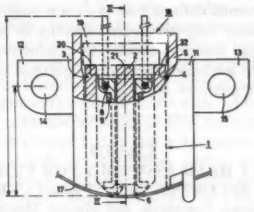
Joseph H. Borghans, Heerlen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 17,226, Mar. 5, 1979. This application Aug. 28, 1980, Ser. No. 182,191

Claims priority, application Netherlands, Mar. 28, 1978, 7803231

Int. Cl.³ G11B *5/27*

U.S. Cl. 360—118 **1 Claim**



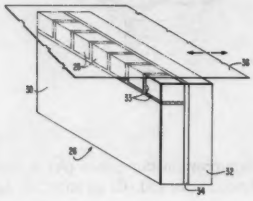
1. A magnetic erasing head for use in radio receiver/tape recorder combinations, comprising a housing, a core unit formed by core parts of a sintered oxidic ferromagnetic material and having ends which enclose erasing gaps between them, and an electric erase winding provided on one of the core parts, a surface of the housing having an aperture, the core unit being disposed in the housing such that said ends of the core parts are exposed through said aperture for cooperation with an associated magnetizable record carrier to be erased, characterized in that all of said core parts except at said erasing gaps are spaced apart to form completely open magnetic circuits remote from said erasing gaps to thereby minimize the generation of interference signals which are higher harmonics of the frequency of an erase signal, said core unit comprising two L-shaped core parts and an I-shaped core part, said I-shaped core part having first and second long sides which are mutually opposite, each L-shaped core part having a short limb and a long limb, each short limb having a blunt end, one of said L-shaped core parts being disposed with said blunt end thereof registered with and opposite to said first long side of said I-shaped core part to form a first erasing gap, the other of said L-shaped core parts being disposed with said blunt end thereof registered with and opposite to said second long side of said I-shaped core part to form a second erasing gap, and said erase winding is disposed on said I-shaped core part.

4,366,518

MULTI-TRACK HEAD ASSEMBLY

William W. Chow, and Davis S. Fields, Jr., both of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 2, 1980, Ser. No. 183,559
Int. Cl.³ G11B *5/27*
U.S. Cl. 360—121 **4 Claims**



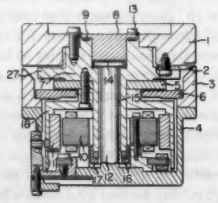
1. A multitrack magnetic head assembly comprising:
a nonmagnetic substrate;
at least three equal width, uniformly spaced magnetic blocks arranged in a row and joined at their respective first faces to one surface of said substrate for forming a closure section;
a magnetic wafer disposed a preselected distance from, and joined to, another surface of said substrate substantially perpendicular to said one surface and to respective second faces of said magnetic blocks that are substantially perpendicular to said first faces, said preselected distance defining a common transducing gap for respective magnetic head elements defined between each magnetic block and the common magnetic wafer, thereby to provide a composite head assembly capable of concurrently processing data from multiple tracks of a multiple track magnetic recording medium.

4,366,519

ROTARY HEAD ASSEMBLY FOR VIDEOTAPE RECORDER OR REPRODUCER

Teruo Maruyama, Neyagawa, and Masato Morimoto, Kadoma, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 14, 1980, Ser. No. 168,475
Claims priority, application Japan, Jul. 18, 1979, 54-91312
Int. Cl.³ G11B *5/10, 15/60, 21/18*
U.S. Cl. 360—129 **6 Claims**



1. A rotary head assembly for a video tape recorder or reproducer, comprising:
a stationary member;
a stationary shaft having a fixed end secured to said stationary member and a free end comprising a thrust bearing;
a rotating body comprising:
(a) a rotary sleeve surrounding and coaxial with said stationary shaft, and disposed for rotation about the axis of said shaft;
(b) an upper cylinder secured to said rotary sleeve;
(c) at least one transducer head secured to said upper cylinder; and
(d) drive means for rotating said rotary sleeve, upper cylinder and transducer head;
said thrust bearing supporting said rotating body at a point substantially coinciding with the center of gravity of said rotating body.

4,366,520

DIFFERENTIAL TRANSFORMER CORE FOR PULSE CURRENTS

Guenter B. Finke, Cherry Hill, N.J., and Bao-Min Ma, Philadelphia, Pa., assignors to Magnetic Metals Corporation, Camden, N.J.

Filed Mar. 25, 1981, Ser. No. 247,439
Int. Cl.³ H02H *3/28*
U.S. Cl. 361—45 **10 Claims**

5. A ground fault circuit interruptor comprising:
a transformer core having a plurality of coaxially wound interleaved strips of magnetically permeable material for producing a rounded hysteresis loop;
a primary winding having at least one pair of wires passing through the core and connectable at a first end thereof to a voltage source and at an opposite end thereof to a load;
a secondary winding wound on the core; and
means connected in circuit with the secondary winding for interrupting current flow through a load in response to a preselected differential current flow through the wires resulting from fault current flowing from one of the wires to ground.

4,366,521

SEQUENCE FILTERS FOR DETERMINING THE SYMMETRICAL COMPONENTS OF MULTIPHASE AC POWER SYSTEMS

Ralph D. Jessee, Shawnee Township, Allen County, Ohio, assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

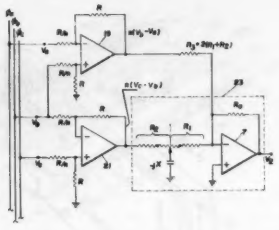
Filed Feb. 29, 1980, Ser. No. 126,092
Int. Cl.³ H02H *3/26*
U.S. Cl. 361—76 **5 Claims**

1. Apparatus for generating the positive or negative sequence voltage from a three phase AC source voltage, said apparatus comprising:
means for generating a first line-to-line voltage as the difference between a first two of the source voltages;
means for generating a second line-to-line voltage as the difference between one of said first two source voltages and the third source voltage;
means for phase shifting one of said line-to-line voltages 120° to bring it into phase with the other line-to-line voltage, said means including a potentiometer having a tap point, a capacitor connected between the tap point and ground, means for connecting said first line-to-line voltage to one end of the potentiometer, an operational amplifier and

means connecting the other end of the potentiometer to the inverting input of the operational amplifier;

means for summing said phase shifted line-to-line voltage and said other line-to-line voltage to produce said positive or negative sequence voltage; and

wherein said means for generating said first line-to-line voltage includes a second operational amplifier, means for applying one of said source voltages to the inverting input thereof, a n..n-reactive impedance connected in series with the output of said second operational amplifier and a junction and means for applying a second source voltage



to said junction, wherein said junction is connected to the first end of said potentiometer in said phase shifting means to shift said first line-to-line voltage 120° in phase, wherein said means for generating said second line-to-line voltage includes a third operational amplifier and means for applying the third source voltage and the output of said first operational amplifier to the inverting input of said third operational amplifier and wherein said means for summing said phase shifted line-to-line voltage with the second line-to-line voltage includes means for applying the output of the operational amplifier in the phase shifting means to the inverting input of the third operational amplifier.

4,366,522

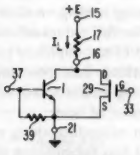
SELF-SNUBBING BIPOLAR/FIELD EFFECT (BIOFET) SWITCHING CIRCUITS AND METHOD

Richard H. Baker, Bedford, Mass., assignor to Reliance Electric Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 101,465, Dec. 10, 1979, abandoned. This application May 2, 1980, Ser. No. 146,200

Int. Cl.³ H02H *7/20*

U.S. Cl. 361—91 **65 Claims**



35. A transistorized switching device, comprising:

a bipolar transistor having a collector electrode for receiving an operating voltage, an emitter electrode for connection to a source of reference potential, and a base electrode for receiving a first control signal; and

a field-effect transistor having drain and source electrodes connected to said collector and emitter electrodes, respectively, and a gate electrode for receiving a second control signal;

said transistorized switching device being operable for turning on said field-effect transistor before said bipolar transistor for substantially reducing the voltage across the collector and emitter electrodes of the latter, which is then turned on and off as desired at substantially reduced peak power dissipation via the snubbing effect of the field-effect transistor.

4,366,523

ARRESTER WITH SPARK GAP

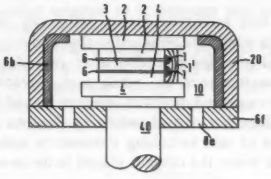
Peter Hasse, Neumankt; Johannes Wiesinger, Puchheim, and Erich Pivit, Allmersbach, all of Fed. Rep. of Germany, assignors to AEG-Telefunken Aktiengesellschaft, Frankfurt and Berlin, Fed. Rep. of Germany

Filed Apr. 24, 1981, Ser. No. 257,423

Claims priority, application Fed. Rep. of Germany, Apr. 26, 1980, 3016265

Int. Cl.³ H02H *9/06*

U.S. Cl. 361—120 **13 Claims**



1. In an overvoltage arrester composed of two electrodes each presenting a side wall and an end wall transverse to the side wall and whose perimeter is borderd by the side wall, the electrodes being spaced apart to define a spark gap and with their end walls facing one another, and an insulating member interposed between the end walls of the two electrodes, the improvement wherein said insulating member is dimensioned to protrude laterally beyond the entire perimeter of said end wall of at least one said electrode for causing the initiation of an arc to generate a sliding arc discharge following a curved path around the laterally protruding part of said insulating member, said insulating member is of a material which emits a quenching gas under the influence of heat, each said electrode exhibits an abrupt change in diameter at a location spaced from its associated end wall, said electrodes present at the location of their abrupt change of diameter respective opposing electrode end faces spaced from one another by a distance which is greater than the spacing defined by said insulating member interposed between said end walls of said electrodes, and the perimeter of said end faces protrudes laterally beyond the perimeter of said insulating member.

4,366,524

ELECTROMECHANICAL TRANSDUCER CONTROLLING DEVICE

Hiroshi Kuroiwa, and Takao Sasayama, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 891,003, Mar. 28, 1978, abandoned. This application May 23, 1980, Ser. No. 152,666

Claims priority, application Japan, Mar. 31, 1977, 52/35253

Int. Cl.³ F16K *31/06*

U.S. Cl. 361—154 **12 Claims**

1. A device for controlling an electromechanical transducer comprising:

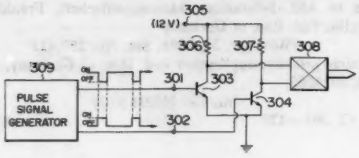
an electromagnetic valve including an electromagnetic coil and a movable member displaced in proportional relation to an electrical input signal applied to said electromagnetic coil thereby driving a controlled element;

at least one switching means for chopping the electrical input signal applied to said electromagnetic coil; and

means for generating an electrical pulse signal for triggering said switching means,

wherein the electrical pulse signal generated by said pulse generating means and applied to said switching means has

a constant period shorter than the minimum response time required for said movable member to make its predetermined full stroke, and the duty cycle of the electrical pulse signal applied to said switching means is varied to cause displacement of said movable member in proportional relation to the variation of the duty cycle, and



wherein said switching means comprises two switching elements which are arranged so that said movable member is urged in a first direction when one of said switching elements is turned on, while said movable member is urged in a second direction opposite to said first direction when the other of said switching elements is turned on, and one of said switching elements is maintained in its off-state when the other is placed in its on-state.

4,366,525

AIR IONIZER FOR ROOMS

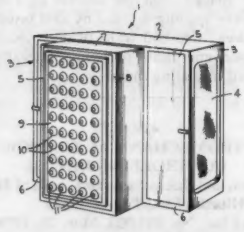
Carl Baumgartner, Hombrechtikon, Switzerland, assignor to Elcar Zürich AG, Rapperswil, Switzerland

Filed Mar. 4, 1981, Ser. No. 240,399

Claims priority, application Switzerland, Mar. 13, 1980, 1967/80

Int. Cl.³ B03C *3/40*; H01G *3/00*

U.S. Cl. 361—231 **7 Claims**



1. In an air ionizer useful for distributing negative ions in enclosed spaces in buildings, the air ionizer including a housing which has an air inlet opening and an air outlet opening, a fan located within the housing to suck environmental air into the housing through the air inlet opening and thereafter blow the air out of the housing through the air outlet opening, a number of negative ion-producing electrodes positioned in the housing for producing negative ions in the air therein, and a high-voltage generator electrically connected to the negative ion-producing electrodes, the improvement wherein a mounting plate which includes a multiplicity of individually adjustable ball nozzles is positioned over the air outlet opening, each of the ball nozzles being rotatable to determine in what direction the air with negative ions passing therethrough will flow.

4,366,526

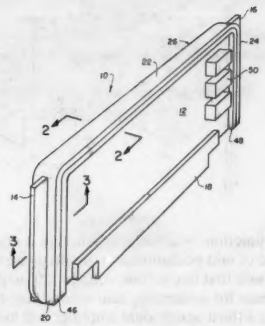
HEAT-PIPE COOLED ELECTRONIC CIRCUIT CARD

Bruno Lijoi, Farmingdale; Vincent Cirrito, Massapequa Park, and Fred Edelstein, Hauppauge, all of N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Oct. 3, 1980, Ser. No. 193,425

Int. Cl.³ H05K *7/20*

U.S. Cl. 361—385 **1 Claim**



1. An electronic component mounting module for use in a rack associated with electronic systems, said rack having frame members provided with guide rails receiving said electronic module, said frame members having cooling means therein, the improvement comprising:

an elongated metallic circuit card having first and second longitudinal sides and first and second ends, said circuit card having a solid substantially planar thermally conductive body mounting a plurality of electronic components on the opposite surfaces thereof;

a heat pipe integral with and in thermal contact with said body and extending along the edge of said first longitudinal side and said first and second ends, said heat pipe having a hermetically sealed casing having an uninterrupted vapor flow passage extending the full extent of said heat pipe, said casing being evacuated of air, capillary pumping means in said casing, and in a working fluid contained in a liquid state in said capillary pumping means and a vapor state in said flow passage for the transfer of heat;

an electrical connector extending along said second longitudinal side of said card and establishing electrical communication with said electronic components mounted on said card;

elongated coplanar upstanding tabs on said heat pipe and extending from said heat pipe at said ends of said card, said tabs fitting into said guide rails in said frame members in said rack such that said card is installed in said rack for operation therein, wherein the longitudinal section of said heat pipe serves as the evaporator region and the end sections serve as the condenser regions whereby the heat generated by the operation of said electronic components is conducted through said card body and passes into said heat pipe longitudinal section, evaporating said liquid in said capillary means, the vapor therefrom transferring said heat to the condenser section of said heat pipe where said heat is conducted through said tabs for dissipation therefrom.

4,366,527

CIRCUIT ASSEMBLIES EACH WITH A CONNECTOR HAVING AN INSULATING BLOCK WITH TWO SEPARABLE STACKED PARTS

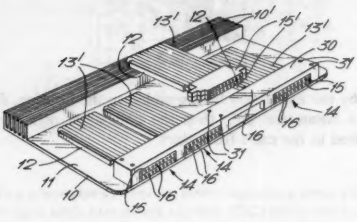
Melvyn R. Bell, Fife, Scotland, assignor to Ferranti Limited, Cheadle, England

Filed Mar. 27, 1980, Ser. No. 134,463

Claims priority, application United Kingdom, Mar. 31, 1979, 7911360

Int. Cl.³ H05K *7/20*

U.S. Cl. 361—386 **7 Claims**



1. A circuit assembly comprising an at least substantially planar substrate, on at least one major surface of which substrate is supported at least one component with leads extending therefrom, and there is also supported on at least one major surface of the substrate at least one connector connected to said at least one component, the connector having a plurality of electrically conducting connector pieces, each connector piece both co-operating with a lead of the component and providing a terminal of the circuit assembly, the leads extend from two opposing surfaces of the component, and the leads from one surface of the component exclusively extend at least substantially in one of two planes parallel to said one major surface of the substrate, in which planes the leads extend, and leads extending from different surfaces of the component extend in different planes parallel to said one major surface of the substrate, the connector pieces extend parallel to each other, and parallel to said one major surface of the substrate, the connector pieces are secured to a block of electrical insulating material of the connector, and extend at right angles to at least one surface of the insulating block, the connections between the connector pieces and the leads are at least partially protected by the insulating block, and the block of insulating material is in two separable parts, the two separable block parts being stacked one on the other, and are rigidly secured to the substrate, within the completed circuit assembly, and the leads extending from one surface of the component are connected exclusively to the connector pieces secured to one of the two separable block parts, the leads extending from different surfaces of the component being connected to the connector pieces secured to different separable block parts.

4,366,528

SWITCHBOARD HOUSING APPARATUS

David B. Cole, Ballwin, Mo., assignor to GTE Products Corporation, Stamford, Conn.

Filed Dec. 23, 1980, Ser. No. 219,551

Int. Cl.³ H02B *1/20*

U.S. Cl. 361—429 **1 Claim**

1. Switchboard housing apparatus comprising

A. a. a pair of vertically oriented structural support columns, each adapted to support and carry a plurality of components thereon;

b. A first pair of channel members respectively affixed to the lower extremities of said columns;

c. a base frame coupled to said first pair of members so that said columns, said members, and said frame form a completely free standing assembly;

d. a second pair of channel members respectively affixed to the upper extremities of said columns;

e. a top frame coupled to said second pair of members; and

f. corner posts coupled to said top frame and said bottom frame;

B. means, within said frames and corner posts, for supporting a bus bar comprising

a. an elongated steel member having at least one bolt hole therethrough, said steel member being coated with an insulative material;

b. a first formed washer of insulative material adapted to seat within said hole at one side of said steel member;

c. a second formed washer of insulative material adapted to seat within said hole at a side opposite to said one side of said steel member;

d. a metal bolt adapted to fit within said washers and said hole;

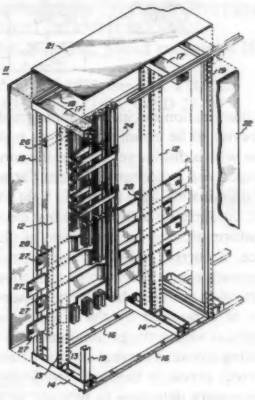
e. a nut adapted to engage with said bolt; and

f. a flat washer adapted to fit between said nut and said second formed washer;

C. a bus distribution arrangement for bus bars comprising

a. a plurality of bus bars for carrying and distributing current of a particular voltage at a first phase;

b. a like plurality of bus bars for carrying and distributing current of said particular voltage at a second phase; and



c. a like plurality of bus bars for carrying and distributing current at said particular voltage at a third phase,

wherein all of said bus bars are oriented parallel to one another, and said bus bars are spaced in an interjacent manner: first phase, second phase, third phase, first phase, second phase, etc.; and

D. a distribution bus bar having a length substantially greater than its other two rectangular coordinates, said distribution bus bar having a uniform cross section in planes containing said other two rectangular coordinates,

a. said distribution bus bar being formed with a first groove along one side thereof extending along its length;

b. said distribution bus bar being formed with a second groove along a second side, opposite to said first side, thereof extending along the length of said distribution bus bar;

each of said grooves being formed so that a carriage bolt, or a hexagon head bolt with a flat washer, can be retained by said bar while permitting said bolt to be slid along its retaining groove; and

c. the opposed sides of said distribution bus bar, interjacent said grooves, each being formed with a pair of longitudinally extending crevices and intermediate and side longitudinal ridges, whereby

said formed crevices and formed ridges provide for

great rigidity of said distribution bus bar during a short circuit condition, while providing for a convenient shape to manufacture by way of extrusion, while further providing for an efficient heat sink.

4,366,529

OPTICAL SOURCE UNIT FOR AN ENDOSCOPE

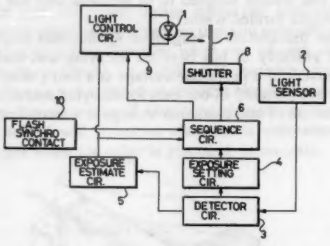
Nagashige Takahashi, Tokyo, and Shinichi Harada, Urawa, both of Japan, assignors to Kabushiki Kaisha Medos Kenkyusho, Tokyo, Japan

Filed Mar. 30, 1979, Ser. No. 25,621

Claims priority, application Japan, Apr. 1, 1978, 53/42876[U]; Apr. 5, 1978, 53/40651

Int. Cl.[3] **G03B** *15/02*

U.S. Cl. 362—4 **9 Claims**



1. In an illumination device for photographing a portion of the body cavity to be examined with an endoscope having a light source with a discharge tube for illuminating the portion to be examined and a mechanical shutter arranged in the optical path of illuminating light from said light source, and optical source unit comprising: a light quantity detecting circuit for detecting information on the brightness of illumination of said light source, a correct exposure time setting circuit, and a correct exposure time estimating circuit coupled to said light quantity detecting circuit; wherein, the closure of said mechanical shutter is controlled by the control operations of said correct exposure time setting circuit and said correct exposure time estimating circuit, a correct exposure time being estimated by said correct exposure time estimating circuit in the initial period of exposure detection to provide an estimation value, whereby said correct exposure time estimating circuit produces control signals for said light source and said mechanical shutter.

4,366,530

UNITARY FRONT LIGHT MOUNTING ASSEMBLY FOR A VEHICLE

Brian B. Milhous, San Jose, Calif., assignor to Paccar Inc., Bellevue, Wash.

Filed Nov. 7, 1980, Ser. No. 205,582

Int. Cl.[3] **B60Q** *1/00*

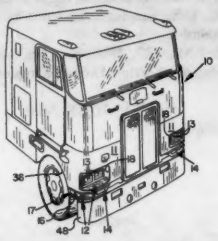
U.S. Cl. 362—80 **10 Claims**

1. A unitary mounting device for a headlight and other lights at the front of a cab-over-engine type truck cab wherein openings are provided in the front skirt of the cab for the headlights, comprising:

an integral housing and means for mounting the housing on the front skirt of the cab, at one side at the front of the cab, generally above the position of the cab's bumper and generally at the back side of one of the openings in the cab's front skirt;

first mounting means associated with the housing for securing at least one headlight to the housing, aimed forwardly through said opening in the cab's front skirt; and

second mounting means in the housing for securing a turn signal light, below the headlight,



whereby the lights may be assembled to the housing, forming a completed unit, then the completed unit may be secured to the cab's front skirt.

4,366,531

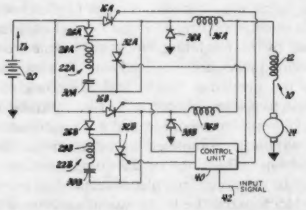
PHASE CONTROL FOR A MULTIPLE PHASE SCR CHOPPER

Sam M. Karadsheh, Troy, and Thomas A. Radomski, Utica, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 188,150, Sep. 17, 1980. This application Aug. 12, 1981, Ser. No. 292,250

Int. Cl.[3] **H02M** *3/135*

U.S. Cl. 363—57 **8 Claims**



1. A chopper drive mechanism for an electric motor of the type wherein current from a common source is applied through first and second paths in like duration pulses at a common repetition rate, wherein means is normally effective to initiate current flow in said second path in predetermined relation with respect to the initiation of current flow in said first path, and wherein the current turn-off in each path must be either after or more than a predetermined time before the current turn-on of the other path, the improvement comprising:

additional means responsive to the time spacing of said pulses and their duration effective to identify when said current flow would be initiated in the second path less than a predetermined time after the current turn-off in said first path; and

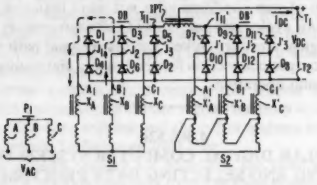
phase shift elements activated by said additional means to advance the initiation of current flow in the second path to a time prior to turn-off of the current flow in the first path.

4,366,532

AC/DC OR DC/AC CONVERTER SYSTEM WITH IMPROVED AC-LINE HARMONIC REDUCTION

John Rosa, Pittsburgh, and Raymond J. Radus, Monroeville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 11, 1981, Ser. No. 262,726
Int. Cl.[3] H02M *7/08, 7/17*
U.S. Cl. 363—69 **9 Claims**



1. In a converter system for interconnecting three-phase AC power lines with two direct current (DC) terminals including:
three primary windings connected to said three-phase AC power lines;
two three-phase secondary windings forming two three-phase voltage systems at 30° phase shift to one another;
six pairs of series-connected rectifying devices connected between said two DC terminals;
one set of three of said pairs of rectifying devices having respective middle points connected to one of said secondary windings and the other set of three of said pairs of rectifying devices having respective middle points connected to the other of said secondary windings;
one interphase reactor being connected between said two sets of rectifying devices;
said rectifying devices being equally distributed between the phases of said secondary windings and operatively conducting in sequential order between said two DC terminals;
said devices commutating one another in successive order from one secondary winding phase to the next;
a plurality of inductances operatively coupled each between one secondary winding and a corresponding middle point between rectifying devices;
said inductances being operative in pairs with the commutating currents of two such successive commutating devices;
one inductance of a pair associated with one of said two such successive commutating devices, the other inductance of a pair associated with the other of said two such successive commutating devices, to reduce the rate of change of the commutating current in both commutating devices, thereby to extend the duration of the attending commutation period, and to reduce the harmonics of the currents drawn from said AC power lines.

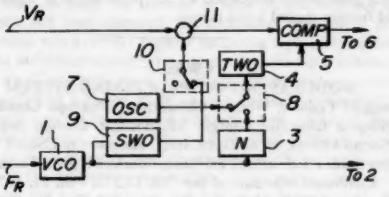
4,366,533

PWM INVERTER DEVICE

Masakazu Kohata, Kamakura; Hideki Hayashi, Sagamihara, and Ichiro Miyashita, Yamato, all of Japan, assignors to Toyo Denki Seizo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 10, 1980, Ser. No. 167,235
Claims priority, application Japan, Jul. 13, 1979, 54-88164
Int. Cl.[3] H02P *7/36*
U.S. Cl. 363—136 **5 Claims**

1. A PWM inverter device for energizing ac motor with variable voltage and variable frequency output obtained from a dc current source by pulse width adjustment, characterized in that the device comprises an oscillator for generating a series of output pulses synchronized with output frequency of the inverter and having frequency integral multiple of the output frequency, a function waveform generator for generating level signal having frequency of 2m times (m being an integer representing the number of phases of the inverter device) of the inverter output frequency in response to the output of said oscillator, a triangle waveform oscillator for generating triangle wave shaped carrier signal having a constant frequency at least 12 times with that of the inverter signal, a modulator for



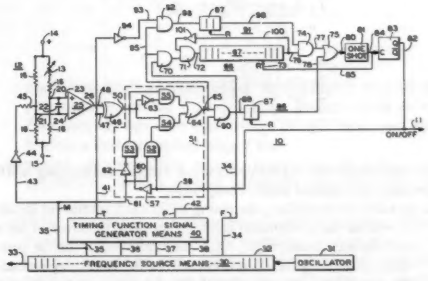
comparing and mixing said level signal with said carrier signal, wherein said level signal is generated in a functional form in order that the pulse width of the inverter output voltage decreases monotonically and forms repeated waveforms by a chopping instruction of the modulator output.

4,366,534

ELECTRONIC CONDITION CONTROL SYSTEM USING DIGITAL ANTICIPATION

Arlon D. Kompelien, Richfield, Minn., assignor to Honeywell, Inc., Minneapolis, Minn.

Filed Jul. 30, 1980, Ser. No. 173,512
Int. Cl.[3] G05B *11/16;* **G05D** *23/20*
U.S. Cl. 364—183 **17 Claims**



1. An electronic condition control system using digital anticipation circuit means, including: frequency source means supplying a plurality of different frequency signals; timing function signal generator means connected to said frequency source means and generating a plurality of timing signals; bridge means including condition responsive impedance means; said bridge means being connected to a first of said frequency signals so that said bridge means has a repetitively cycling output signal at an output means; comparator means having an input connected to said bridge output means; said bridge output signal controlling said comparator means to provide a comparator means output signal; digital logic means connected to said comparator means output and to a first of said timing signals to provide a first digital control signal; anticipation cycle counter means capable of counting a plurality of digital pulses to establish an anticipation time for said condition control system; said anticipation cycle counter means having input gate means and output gate means; said output gate means connected to control bistable output means which establishes "on" and "off" states for said condition control system; further digital logic means connected to receive said first digital control signal, said first signal frequency, and the state of said bistable output means as control inputs; said further digital logic means having an output connected to

said input gate means of said anticipation cycle counter means; and said frequency source means further having a relatively high frequency signal compared to said first frequency signal with said relatively high frequency signal connected to said anticipation cycle counter input gate means to cause said counter means to rapidly fill with counts when said counter input gate means is opened by the presence of a signal from said further digital logic means.

4,366,535

MODULAR SIGNAL-PROCESSING SYSTEM

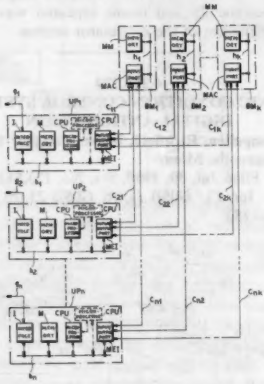
Riccardo Cedolin; Wolmer Chiarottino; Giuseppe Giandonato; Silvano Giorcelli; Giorgio Martinengo; Giorgio Sofi, and Sergio Villone, all of Turin, Italy, assignors to CSELT - Centro Studi e Laboratori Telecomunicazioni S.p.A., Turin, Italy

Continuation-in-part of Ser. No. 13,273, Feb. 21, 1979, abandoned. This application Jan. 14, 1980, Ser. No. 111,942

Claims priority, application Italy, Mar. 3, 1978, 67447 A/78

Int. Cl.[3] **G06F** *11/00, 13/00, 15/16*

U.S. Cl. 364—200 **7 Claims**



1. An electronic signal-processing system dialoguing with associated peripheral units, comprising:

a plurality of modular processing units each including a pair of substantially identical microprocessors interlinked by a correlating connection, each microprocessor being provided with parallel input connections for receiving incoming messages from an internal signal path, only one of said microprocessors having an active output connection for transmitting outgoing messages to said signal path, the other of said microprocessors being available as a standby, each processing unit further including interface means inserted between said signal path and an associated one of said peripheral units, an internal memory connected to said signal path for storing processing information individual to the associated peripheral unit, and coupling means for selectively connecting said signal path to any one of a plurality of external two-way buses forming extensions of said signal path;

a plurality of external memory banks storing general processing information utilizable by any of said processing units; and

access means individual to each of said memory banks for facilitating communication thereof with any of said processing units, in response to a request therefrom, via a corresponding one of said external two-way buses;

each microprocessor of said pair including logical circuitry for performing processing operations, a microprogram memory connected to said logical circuitry for controlling said processing operations, a sequencer linked to said microprogram memory for advancing the microprogram thereof by the emission of addresses of microinstructions to be successively read out therefrom, a time base connected to said logical circuitry and said sequencer for generating a control pulse to establish an operating cycle therefor, and monitoring means in each microprocessor operatively connected to the sequencers of both microprocessors of said pair via said correlating connection and being further connected to said time base for causing same to lengthen the control pulse thereof to double the normal duration of said operating cycle upon detecting an out-of-step condition of said sequencers, thereby enabling resynchronization of said microprocessors upon termination of said out-of-step condition after not more than one normal operating cycle, said one of said microprocessors having said logical circuitry linked with said signal path via said active output connection for sending out the results of said processing operations.

4,366,536

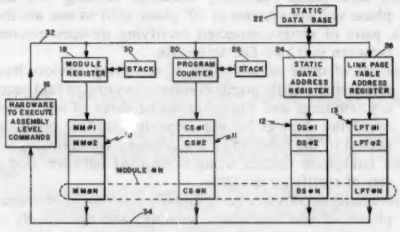
MODULAR DIGITAL COMPUTER SYSTEM FOR STORING AND SELECTING DATA PROCESSING PROCEDURES AND DATA

Leslie D. Kohn, San Mateo, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Apr. 15, 1980, Ser. No. 140,590

Int. Cl.[3] **G06F** *7/00, 7/06, 9/00*

U.S. Cl. 364—200 **9 Claims**



1. A digital computer system for selecting and linking multiple separately stored data processing procedures consisting of assembly level commands and for selecting a variable data area from a plurality of variable data areas, comprising:

a first memory for storing N absolute address trios, where N is any integer greater than one, each of said absolute address trios being selectable by a respective module address with each of said absolute address trios consisting of a link page table address, a code base address and a static data base address;

a second memory for storing N code segments, each of said code segments being selectable by a respective one of said code base addresses and consisting of a plurality of said procedures, with each procedure beginning at an offset address relative to the code base address of the corresponding code segment;

a third memory for storing N static data segments, each of said static data segments being selectable by a respective one of said static data base addresses and consisting of a plurality of said variable data areas with each variable data area having an absolute address;

a fourth memory for storing N link page tables, each of said link page tables being selectable by a respective one of said link page table addresses and containing a number of first and second relative address pairs, each of the relative address pairs being selectable by a respective predetermined displacement address is an assembly level command, with the first relative address being a said module address thereby indicating one of said N code base addresses in the first memory and the second relative address indicating said offset address from the indicated code base address to a predetermined one of said procedures and/or

containing a number of said absolute variable data area addresses, each of said absolute variable data area addresses being selectable by a respective given displacement address in an assembly level command;

a module register for accessing the first memory to select an absolute address trio from the first memory in response to said module address;

a link page table register for accessing the fourth memory to select a relative address pair from the fourth memory in response to the link page table address in the selected absolute address trio and in response to a said predetermined displacement address, and to select an absolute variable data area address from the fourth memory in response to the link page table address in the selected absolute address trio and in response to a said given displacement address;

a program counter for accessing the second memory to select a procedure from the second memory in response to the code base address and the offset address indicated by the selected relative address pair;

a data address register for accessing the third memory to select a variable data area from the third memory either in response to the static data base address in the selected absolute address trio and a fixed displacement address that is included in an assembly level command, or in response to the selected absolute variable data area address; and

a hardware unit adapted to execute assembly level commands and coupled to the memories, the registers and the program counter for executing the procedures selected by the program counter from the second memory; for providing the module address in the relative address pair selected by the link page table register from the fourth memory to the module register for accessing the first memory to select a said absolute address trio; for providing the code base address selected by the module register from the first memory and the offset address selected by the link page table register from the fourth memory to the program counter for accessing the second memory to select a said data processing procedure; for providing the static data base address selected by the module register from the first memory and the displacement address included in an assembly level command of the executed procedure to the data address register for accessing the third memory to select a said variable data area; for providing the absolute variable data address selected by the link page table register from the fourth memory to the data address register for accessing the third memory to select a said variable data area; for providing the link page table address selected by the module register from the first memory and the predetermined displacement address included in an assembly level command of the executed procedure to the link page table register for accessing the fourth memory to select a said relative address pair; and for providing the link page table address selected by the module register from the first memory and the given displacement address included an assembly level command of the executed procedure to the link page table register for accessing the fourth memory to select a said absolute variable data area address.

4,366,537

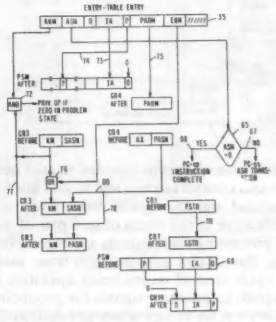
AUTHORIZATION MECHANISM FOR TRANSFER OF PROGRAM CONTROL OR DATA BETWEEN DIFFERENT ADDRESS SPACES HAVING DIFFERENT STORAGE PROTECT KEYS

Andrew R. Heller, Morgan Hill, Calif., and William S. Worley, Jr., Endicott, N.Y., assignors to International Business Machines Corp., Armonk, N.Y.

Filed May 23, 1980, Ser. No. 152,919
Int. Cl.³ G06F *13/00*
U.S. Cl. 364—200 **8 Claims**

1. In a multiprogramming data processing system including (1) a main memory comprised of an addressing mechanism providing access to physical, addressable blocks having associated addressable coded storage protect keys providing access control to the associated physical block, the main memory storing information including data, problem programs, supervisor programs, and system control tables, and (2) processor means for extracting and decoding series of program instructions from the main memory and for performing the operations required including the accessing of physical addressable blocks in the main memory for transfer of information between the processor and main memory, the processor including a program status word (PSW) register including a plurality of control bits including a problem program bit, the binary state of which signifies a problem or supervisor program state, control fields including a coded PSW protect key field connected to the access control of the main memory to be compared with the coded storage protect key of a physical block to be accessed in main memory, and an instruction address field connected to the addressing mechanism of the main memory for accessing the next program instruction to be executed, the improvement comprising:

key-mask storage comprised of a plurality of binary key-



mask bits, each corresponding to a different one of the permutations of the coded storage protect keys in the PSW protect key field and storage protect keys, and each having a first or second binary state,

program call signalling means, responsive to a program instruction, from a calling program, providing a called program identification,

entry access means responsive to said called program identification, including means for accessing a particular entry in an associated system control table for transferring said particular entry to the processor, and means for storing said particular entry which comprises entry control information including an initial called program instruction address, and an authorization key-mask having the same plurality of binary key-mask bits as said key-mask storage, and

key-mask checking means, connected to said key-mask storage and said authorization key-mask, including means for performing a bit-for-bit combinatorial function and providing an interrupt signal in response to a particular result of said combinatorial function.

4,366,538

MEMORY CONTROLLER WITH QUEUE CONTROL APPARATUS

Robert B. Johnson, Billerica, and Chester M. Nibby, Jr., Peabody, both of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

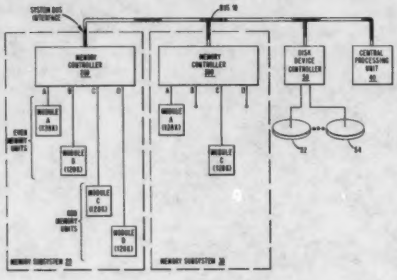
Filed Oct. 31, 1980, Ser. No. 202,560
Int. Cl.³ G06F *13/00*
U.S. Cl. 364—200 **26 Claims**

1. A memory controller for use in a system including at least one request generating unit coupled to a bus in common with said controller, said controller being coupled to at least one

memory module for controlling the operation of said module in response to a number of different types of memory requests generated by said unit requiring one or more memory cycles of operation, said module including a plurality of word locations and said controller including control circuits for generating command signals requesting said controller to perform internal operations requiring memory cycles of operation, said controller comprising:

at least a pair of queue circuit means, each being coupled in common to said module and to said bus, for receiving a different one of said plurality of memory requests;

queue control means coupled to each of said pair of queue circuit means and to said control circuits; and,



memory cycle control means coupled to said queue control means, to said control circuits and to said bus for receiving said command signals, signals from said queue control means indicative of the status of said pair of queue circuit means in processing said requests and signals from said bus indicating the receipt of a request from said unit, said memory cycle control means being operative in response to said signals to generate signals for producing succeeding memory cycles of operation as required for the processing of internal operations and said memory requests so as to minimize conflict therebetween.

4,366,539

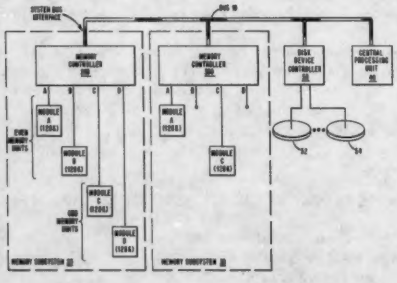
MEMORY CONTROLLER WITH BURST MODE CAPABILITY

Robert B. Johnson, Billerica, and Chester M. Nibby, Jr., Peabody, both of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Oct. 31, 1980, Ser. No. 202,819

Int. Cl.³ G06F *13/00*

U.S. Cl. 364—200 **36 Claims**



1. A memory controller for use in a system including at least one request generating unit coupled to a bus in common with said controller, said controller being coupled to a number of memory modules including a plurality of word locations in each module and said controller being operative to control the operation of said number of modules in response to memory requests generated by said unit, said memory requests including predetermined types of memory requests coded to specify the read out of a number of data words over successive memory cycles of operation and each predetermined type of memory request including a memory address specifying where in said memory modules the read out of said words is to begin, said controller comprising:

address counter circuit means coupled to said bus for receiving a predetermined address portion of each said memory request address and said address counter circuit means being operatively coupled to apply address signals to said module for specifying the locations to be addressed within said number of modules during each of said successive memory cycles of operation; and,

mode control means coupled to said address counter means and to said bus, said mode control means being operative in response to each predetermined type of request to switch from a first to a second state, conditioning said controller for operating in a predetermined mode of operation, said mode control means when in said second state generating signals for incrementing by one said predetermined address portion loaded into said address counter circuit means by said mode control means in response to said each predetermined type of request after each successive memory cycle of operation, enabling the read out of successive words from consecutive locations of said number of memory modules, and said address counter means, upon being incremented to a predetermined count, generating an output signal indicating the termination of said predetermined type of memory operation, said mode control means in response to said output signal being operative to switch from said second state to said first state, enabling said controller to accept another predetermined type of memory request.

4,366,540

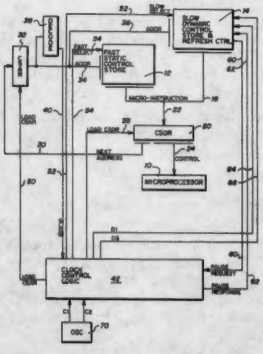
CYCLE CONTROL FOR A MICROPROCESSOR WITH MULTI-SPEED CONTROL STORES

Neil C. Berglund, Kasson, and John R. Burchfiel, Jr., Rochester, both of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 953,674, Oct. 23, 1978, abandoned. This application Feb. 12, 1981, Ser. No. 234,004

Int. Cl.³ G06F *1/04*

U.S. Cl. 364—200 **7 Claims**



1. Apparatus for controlling the cycle time of a microprocessor operable to execute instructions selectively fetched from a first control store memory unit operating in response to being addressed and receiving a select signal at a first predetermined speed and from a second control store memory unit operating

in response to being addressed and receiving a select signal at a second predetermined speed the improvement comprising

addressing means for addressing said first and second control store memory units for accessing said microinstructions; and

logic means responsive to said addressing means for generating and applying select signals to said first and second control store memory units and for controlling the cycle time of the microprocessor at fist and second rates by generating clocking signals synchronous with said first and second predetermined speeds, the cycle time of the microprocessor being at said first rate in response to said addressing means addressing said first control store and at said second rate in response to said addressing means addressing said second control store whereby the cycle time of said microprocessor automatically adjusts to the rate that instructions are available for execution.

4,366,541

METHOD AND SYSTEM FOR ENGINE CONTROL

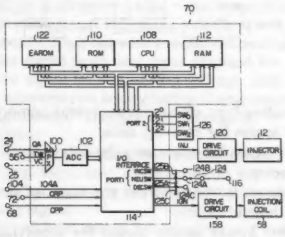
Yasunori Mouri, Katsuta; Seiji Suda, Mito; Masami Shida, Katsuta, and Toshio Furuhashi, Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 11, 1980, Ser. No. 139,264

Claims priority, application Japan, Apr. 13, 1979, 54-44364

Int. Cl.³ F02B *3/04;* **F02D** *5/02;* **G06F** *15/20*

U.S. Cl. 364—431.05 **33 Claims**



10. An engine control system wherein an engine control signal is produced on the basis of data representative of a signal detected from at least one sensor for detecting an operating condition of an engine being operated said system comprising:

(a) means for adjusting data representative of a detection signal of said at least one sensor in a manner to attain the proper operating condition of the engine;

(b) a memory for storing correction data corresponding to a correction value of said data representative of the detection signal in response to said adjusting means;

(c) means for producing said engine control signal on the basis of data representative of a detection signal from said at least one sensor and said correction data stored in said memory; and

(d) means for controlling the operation of said engine on the basis of the control signal produced from said control signal generating means.

20. A method of operating a processor-controlled engine in which processor-derived control signals are produced in response to output signals from at least one sensor means for detecting at least one operation condition of the engine comprising the steps of:

(a) obtaining a reference value in response to an output signal of a sensor means for detecting a preselected operational condition of the engine for a prescribed state of operation of the engine, which reference value is representative of the amount by which the value of the output signal of said sensor means is to be modified in order to attain the proper operating condition of the engine;

(b) storing, in memory, a correction value corresponding to said reference value, in dependence upon which processor-derived control signals are produced;

(c) for a predetermined operational state of said engine, modifying a value representative of an output signal of the sensor means for detecting said preselected operational condition of the engine using said correction value stored in memory; and

(d) producing an engine control signal on the basis of the modified output signal value obtained in step (c).

4,366,542

CONTROLLING THE OPERATION OF A PRINTING EQUIPMENT

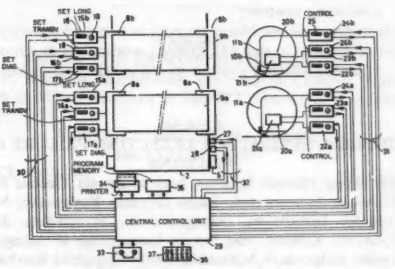
Lodewi k Anselrode, St. Anthonis, Netherlands, assignor to Stork Brabant B.V., An Boxmeer, Netherlands

Filed Aug. 6, 1980, Ser. No. 175,774

Claims priority, application Netherlands, Aug. 10, 1979, 7906131

Int. Cl.³ G06F *15/46;* **B41F** *31/04*

U.S. Cl. 364—469 **18 Claims**



7. In a printing apparatus in which a substrate is passed through the apparatus and is printed upon by a series of consecutive printing elements, each of which is adjustable in accordance with a plurality of parameters, there being an individual control device arranged to adjust each respective parameter, the invention herein which comprises:

A. sensor means associated with said control devices and responsive to the condition of the respective control devices to provide a signal for each parameters,

B. an information carrier coupled with said sensor means, capable of recording in data form signals for said parameters representing the optimum parameter values for a particular printing pattern,

C. and means for reading out said data and driving said control devices automatically to adjust all of said parameters to correspond to those represented by said optimum data.

4,366,543

METHOD AND APPARATUS FOR THE OUT-OF-ROUND SHAPING OF WORKPIECES

Otto Feller, Leichlingen; Heinz Oepen, Hückeswagen, and Jochen Stechow, Leichlingen, all of Fed. Rep. of Germany, assignors to Goetze AG, Burscheid, Fed. Rep. of Germany

Filed Apr. 30, 1980, Ser. No. 145,763

Claims priority, application Fed. Rep. of Germany, May 5, 1979, 2918249

Int. Cl.³ G05B *19/18;* **G06F** *15/46*

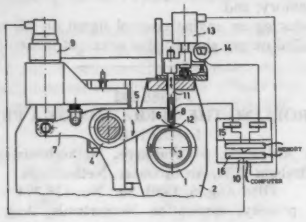
U.S. Cl. 364—474 **7 Claims**

1. In a method for the out-of-round shaping of a circumferential surface of a workpiece; including the step of controlling the radial feed of a shaping tool numerically or electronically as a function of a desired out-of-round contour stored in a first memory; the improvement comprising the following steps:

(a) scanning the actual out-of-round contour of the workpiece at a location axially adjacent the location where said

shaping tool is providing the out-of-round contour on the workpiece as a function of said desired out-of-round contour;

(b) comparing the actual out-of-round contour determined in step (a) with said desired out-of-round contour;



(c) correcting said desired out-of-round contour based on deviational data obtained in step (b) for determining a machining contour;

(d) storing said machining contour in a second memory; and

(e) subsequent to step (d), shaping workpieces as a function of said machining contour stored in said second memory.

4,366,544

JUDGING SYSTEM FOR DETECTING FAILURE OF MACHINE

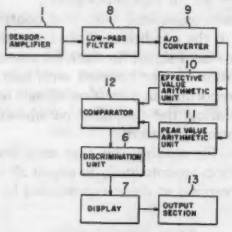
Ichiji Shima; Hiroshi Teshima, both of Kansai Electric Power Company Incorporated, Sohgo Gijyutsu Kenkyusho, No. 1, Nakohji Ichinotsubo, Amagasaki-shi, Hyogo-ken, Japan; Takayuki Koizumi, and Satoru Inoue, both of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo; Ichiji Shima and Hiroshi Teshima, both of Amagasaki, all of, Japan

Filed Apr. 16, 1980, Ser. No. 140,832

Claims priority, application Japan, Apr. 16, 1979, 54-46426

Int. Cl.[3] G08B *21/00*; G01N *29/00*

U.S. Cl. 364—550 **5 Claims**



1. A method for detecting a failure of a machine comprising the steps of;

detecting output signals from said machine by the use of a detection unit;

filtering said detected signals in a low-pass filter;

converting the output of said filter to a digital output in a A/D converter;

operating upon the digital output of said converter in an arithmetic unit and comparing in a comparing unit the output of said arithmetic unit with a set value to display the possibility of failure of said machine:

performing plural operation of said detection unit, said A/D converter unit, said arithmetic unit and said comparator unit for detecting said signals and comparing the output given by said arithmetic unit with a set value to indicate the failure of said machine when said outputs of said arithmetic unit exceed said set value a predetermined number of times.

4,366,545

RECORDING TYPE ELECTRONIC APPARATUS

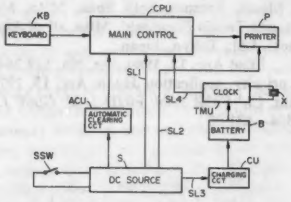
Tsuyoshi Kawanabe, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 3, 1980, Ser. No. 136,772

Claims priority, application Japan, Apr. 10, 1979, 54-42499

Int. Cl.[3] G06F *3/12, 15/02*

U.S. Cl. 364—569 **3 Claims**



1. A recording-type electronic apparatus comprising:

key input means for entering data;

arithmetic means for processing the data entered by said key input means;

printing means for printing out the result of processing by said arithmetic means;

first electric power source means for supplying power to said arithmetic means, said power source means including voltage transformer means having a primary side connected to an alternating current source, a secondary side that produces an alternating current output having voltage lower than the voltage of alternating current input to said primary side, and means for rectifying the output voltage from said secondary side of said voltage transformer means to apply the rectified output to said arithmetic means;

switching means provided at said primary side of said voltage transformer means for controlling the power supply to said secondary side of said transformer means;

detecting means connected to an output of said rectifying means of said first electric power source means for detecting the initiation of power supply from said first electric power source means to said arithmetic means under control of said switching means;

timer means for counting time;

second electric power source means for supplying power to said timer means, having a battery which is charged by the rectified output from said rectifying means; and

control means responsive to the detection by said detecting means of the supply of power from said first electric power supply means under control of said switching means for applying the time counting information from said timer means to said printing means to instruct the printing of time counting information, said control means controlling said apparatus to take a standby state for accepting data entered by said key input means after termination of the printing operation of said printing means to print the time counting information.

4,366,546

SIGNAL PROCESSOR FOR SKID CONTROL DEVICE

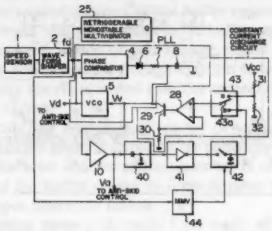
Akira Tachibana, Yokosuka; Akira Endo, Katsuta, and Kenji Sekine, Tokyo, all of Japan, assignors to Hitachi, Ltd. and Nissan Motor Co., Ltd., both of Tokyo, Japan

Filed Aug. 27, 1980, Ser. No. 181,762

Claims priority, application Japan, Sep. 7, 1979, 54-114076; Sep. 7, 1979, 54-114077

Int. Cl.³ B60T *8/02*; G06G *7/48*

U.S. Cl. 364—571 **6 Claims**



1. A vehicle-speed signal processing circuit for a skid control device comprising:

(a) an input terminal supplied with a Doppler pulse signal detected by a Doppler radar vehicle speed sensor, and Doppler pulse signal indicating vehicle speed;

(b) frequency-voltage converter means connected to receive said pulse signal from said input terminal for converting said pulse signal into an analog voltage, said frequency-voltage converter means including charge means for accumulating electric charges corresponding to a vehicle-speed signal;

(c) signal dropout detecting means connected to receive the pulse signal from said input terminal for detecting the absence of an incoming pulse in a predetermined time to generate a signal;

(d) sample-and-hold means for sampling and holding a rate of change in the output voltage of said frequency-voltage converter means;

(e) discharge-time-constant setting means connected to receive the output of said sample-and-hold means in response to the output of said signal dropout detecting means, for determining a discharge time constant of said charge means in accordance with the output from said sample-and-hold means; and

(f) output means coupled to the output of said frequency-voltage converter for providing a compensated output signal, said compensated output signal being formed in such a manner as to compensate a missing part in said Doppler pulse signal.

4,366,547

DIGITAL FILTER WITH SCALED TAP COEFFICIENTS

Charles K. Miller, Concord, Mass., assignor to Codex Corporation, Mansfield, Mass.

Filed Sep. 18, 1980, Ser. No. 188,536

Int. Cl.³ G06F *15/31*

U.S. Cl. 364—724 **5 Claims**

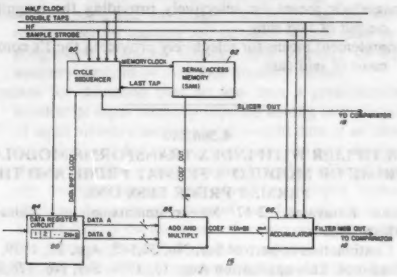
1. Modem circuitry for processing signals representing digital data, comprising

sampling means for providing a stream of samples of said signals,

storage means connected to receive from said sampling means and to store a set of said samples,

arithmetic means responsive to said storage means and connected to multiply each said sample by a tap coefficient drawn from a set of scaled tap coefficients and to add the resulting products to form a multiple-bit value, and

comparator means responsive to said arithmetic means and connected to compare a predetermined group of the bits of said multiple-bit value with a threshold value to produce an output signal, said group being selected from a set



consisting of fewer than all the bits in said multiple-bit value.

4,366,548

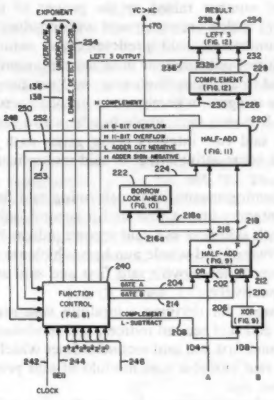
ADDER FOR EXPONENT ARITHMETIC

Glen R. Kregness, Minnetonka, and Peter B. Criswell, Bethel, both of Minn., assignors to Sperry Corporation, New York, N.Y.

Filed Jan. 2, 1981, Ser. No. 221,981

Int. Cl.³ G06F *7/48*

U.S. Cl. 364—748 **18 Claims**



1. In a data processing system having an arithmetic system for performing floating-point arithmetic operations, a characteristic adder comprising:

operand input means for receiving first and second operands, each comprised of a plurality of bits;

adder means coupled to said operand input means for providing the sum of said first and second operands;

output signaling means for providing output signals when said second operand is numerically greater than said first operand;

overflow detecting means for selectively providing overflow indicating signals indicative of overflow error conditions;

negative result detecting means for providing adder output negative signals when said sum is negative;

function input means for receiving function signals indicative of selected operations to be performed by said adder means;

function control means coupled to said function input means,

said negative result detecting means, and said overflow detecting means, and said adder means for selectively controlling operation of said adder means in response to said function signals;

magnitude means for selectively providing the magnitude output of said sum;

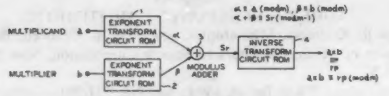
complement means for selectively providing the 1's complement of said sum.

4,366,549

MULTIPLIER WITH INDEX TRANSFORMS MODULO A PRIME OR MODULO A FERMAT PRIME AND THE FERMAT PRIME LESS ONE

Aisuke Katayama, 2-47 Kawamotomutsumicho, Akita-shi, Akita, Japan

Continuation-in-part of Ser. No. 34,145, Apr. 27, 1979, abandoned. This application Aug. 15, 1980, Ser. No. 178,676
Claims priority, application Japan, May 1, 1978, 53-50747
Int. Cl.³ G06F 7/52
U.S. Cl. 364—757 **20 Claims**



1. A multiplication system for calculating a product of two integers by a use of a prime number m modulus and a predetermined natural number raised to the power of consecutive whole numbers which are congruent with residues modulo of said prime number m, said predetermined natural number being a primitive root inherent in said prime number m, and when arranged in an ascending order, said residues form a set of consecutive integers, whereby a one-to-one correspondence is established between said whole numbers and said consecutive integers, said two integers being given as a first and a second of said consecutive integers, said multiplication system comprising:

first transforming means for transforming said first and said second integers into a first and a second index, respectively, with said first and said second indices being given by those two of said whole numbers which are in a one-to-one correspondence with said first and said second integers, respectively;

summing means for deriving a modulus sum responsive to said first and said second indices, said modulus sum being a sum of said first and said second indices which is congruent with said modulus sum modulo of said prime number m less one; and

second transforming means for transforming said modulus sum to said product given by that one of said consecutive integers which is in a one-to-one correspondence with one of said whole numbers, said one whole number being given by said modulus sum.

4,366,550

MONOLITHIC SEQUENTIAL PROCESSOR FOR FOUR-QUADRANT MULTIPLIER ARRAYS

Donald R. Lampe, Ellicott City, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

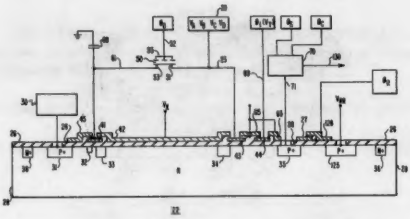
Continuation of Ser. No. 3,459, Jan. 15, 1979, abandoned. This application Jul. 28, 1980, Ser. No. 227,431
Int. Cl.³ G06G 7/16
U.S. Cl. 364—844 **29 Claims**

1. A charge-coupled circuit for metering electrical charge comprising:

(a) input means including first switching means for providing a sequence of voltage potentials;

(b) charge-coupled means coupled to said input means for providing charge indicative of said sequence of potentials; and

(c) circuit means coupled to said charge-coupled means including potential converting means for providing and storing a signal indicative of said charge provided by said charge-coupled means, output means coupled to said potential converting means including second switching means for providing in response to a switching signal, an output signal indicative of the signal provided by said



potential converting means, and discharge means for removing charge in said charge-coupled means at predetermined times;

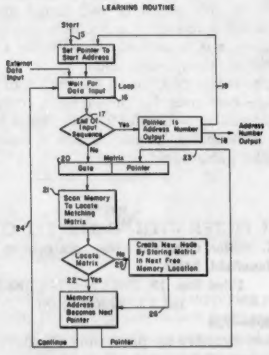
said potential converting means including a capacitor, buffer means coupled between said charge-coupled means and said capacitor for providing a drive of appropriate impedance for charging said capacitor, and grounding means responsive to a control signal for coupling one side of said capacitor to ground.

4,366,551

ASSOCIATIVE MEMORY SEARCH SYSTEM

Klaus E. Holtz, 310 Guttenberg St., San Francisco, Calif. 94112

Continuation of Ser. No. 809,569, Jun. 24, 1977, abandoned, which is a continuation of Ser. No. 750,953, Dec. 16, 1976, abandoned, which is a continuation-in-part of Ser. No. 587,069, Jun. 16, 1975, abandoned. This application Oct. 22, 1979, Ser. No. 87,280
Int. Cl.³ G06F 7/22
U.S. Cl. 364—900 **7 Claims**



1. A machine implemented method of conversion of a data sequence into a single address number of an addressable storage location in a storage region, comprising the steps of:

(a) providing a storage region having a plurality of machine addressable storage locations for storing machine readable data characters;

(b) directing the first data character of a data sequence and a starting number into respective first and second positions of a two-position, machine operable buffer region, the

data character and the starting number, when received in respective positions of the buffer region, defining a machine readable input character matrix;

(c) machine addressing the storage locations of the storage region and machine reading the content of each storage location to determine if the input character matrix in the buffer region is stored in the storage region;

(d) if the input character matrix in the buffer region is not stored in said storage region, storing the input character matrix in a free storage location of said storage region and directing the address number of said free storage location into the second position of the buffer region;

(e) if the input character matrix in the buffer region is storage in a storage location of said storage region, directing the address number of the storage location at which the input character matrix is stored into the second position of the buffer region;

(f) directing the next data character of said data sequence into said first position of the buffer region to cause the next data character and the address number in respective positions of the buffer region to form another machine readable input character matrix;

(g) repeating steps c through f for each of the next and remaining data characters of the data sequence; and

(h) terminating the repeating step after the input character matrix corresponding to the last data character of the data sequence has been stored or found to be stored in said storage region, the address number of the storage location which identifies the last input character matrix being operable to represent the data sequence.

4,366,552

POSTAL CHARGE PROCESSING SYSTEM HAVING A COUNT OF SUCCESSIVE WEIGHT MEASURING OPERATIONS

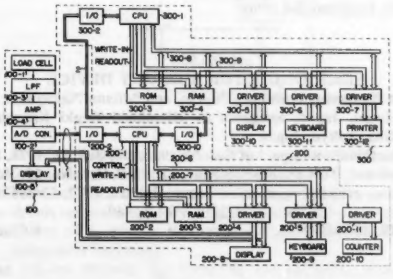
Mitsuo Uchimura, 285-6, Nishi Kumando, Numazu-shi, Shizuoka-ken; Masao Oana, 42-1, Kamo, Mishima-shi, Shizuoka-ken, and Yoshiharu Nishimura, 3-36, Tomita-cho, Mishima-shi, Shizuoka-ken, all of Japan

Filed Feb. 25, 1980, Ser. No. 124,612

Claims priority, application Japan, Mar. 7, 1979, 54-26462

Int. Cl.³ G06F *15/28*

U.S. Cl. 364—900 **2 Claims**



1. A postal charge processing system comprising:

measuring means for measuring the weight of a postal article and for producing weight data corresponding to the weight of said postal article;

first memory means coupled to said measuring means and including a plurality of input memory sections for storing the weight data from said measuring means; and an output memory section;

switching means for setting postal conditions;

second memory means coupled to said switching means for storing postal condition data produced in accordance with the operation of said switching means;

counter means; and

data processing means coupled to said measuring means, to said first and second memory means and to said counter means, said data processing means including:

means for sampling the weight data from said measuring means, and for causing the sampled weight data to be progressively shifted through said plurality of input memory sections of said first memory means;

means for detecting that no less than a predetermined number of input memory sections among said plurality of input memory sections store weight data of an identical value, and for storing, responsive to said detection that no less than a predetermined number of input memory sections among said plurality of input memory sections store weight data of an identical value, said weight data of the identical value into said output memory section of said first memory means;

means for calculating the postal charge according to data stored in said output memory section of said first memory means and in second memory means and for generating postal charge data; and

means for detecting that weight data representing substantially 0 g is generated from said measuring means after completion of calculation of the postal charge and for clearing the memory content of said second memory means while also supplying a count signal to said counter means responsive to said detecting that weight data representing substantially 0 g is generated from said measuring means after completion of calculation of the postal charge.

4,366,553

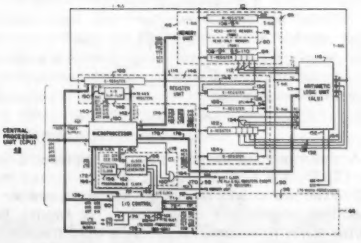
ELECTRONIC COMPUTING APPARATUS EMPLOYING BASIC LANGUAGE

Richard M. Spangler; Eugene V. Burmeister; Frank E. Cada; Wayne F. Covington; Chris J. Christopher; Myles A. Judd; Freddie W. Wenninger; Robert E. Watson, and Kent W. Simcoe, all of Loveland, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 99,101, Nov. 30, 1979, abandoned, which is a continuation of Ser. No. 969,754, Dec. 15, 1978, abandoned, which is a continuation of Ser. No. 758,961, Jan. 13, 1977, abandoned, which is a division of Ser. No. 469,727, May 30, 1974, Pat. No. 4,012,725, which is a continuation of Ser. No. 269,899, Jul. 7, 1972, abandoned. This application Oct. 24, 1980, Ser. No. 200,281

Int. Cl.³ G06F *3/023*

U.S. Cl. 364—900 **9 Claims**



1. Electronic computing apparatus comprising:

keyboard input means having a plurality of alphanumeric keys for entering alphanumeric information, including BASIC languge statements, into the computing apparatus, and having an execution control key for initiating immediate execution of a valid, individual, self-contained BASIC language statement entered into the computing appartaus;

first storage means, coupled to the keyboard input means, for storing said BASIC language statement as it is being en-

tered into the computing apparatus from the keyboard input means;

second storage means, coupled to the first storage means, for storing alphanumeric information, including BASIC language statements, that has been entered into the computing apparatus from the keyboard input means;

third storage means for storing routines and subroutines of instructions to be executed in executing BASIC language statements;

processing means, coupled to the keyboard input means and to the first, second, and third storage means, for executing the routines and subroutines stored in the third storage means to execute BASIC language statements;

said processing means including recognition and selection means for syntactically recognizing a string of alphanumeric characters stored in the first storage means as being a valid, self-contained BASIC language statement and for selecting the routines and subroutines stored in the third storage means to be executed for immediately executing the recognized valid, self-contained BASIC language statement;

said processing means including means responsive to actuation of the execution control key following entry from the keyboard input means of said string of alphanumeric characters representing a valid, self-contained BASIC language statement for executing the routines and subroutines stored in the third storage means that have been selected by the recognition and selection means to execute the valid, self-contained BASIC language statement represented by said entered string of alphanumeric characters; and

output means, coupled to the processing means, for providing an output of results obtained from executing BASIC language statements.

4,366,554

I^2L MEMORY DEVICE

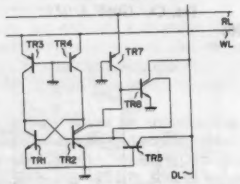
Kiyoshi Aoki, and Kazuaki Ichinose, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

PCT No. PCT/JP79/00235, § 371 Date Jun. 3, 1980, § 102(e) Date Jun. 3, 1980, PCT Pub. No. WO80/00761, PCT Pub. Date Apr. 17, 1980

PCT Filed Sep. 4, 1979, Ser. No. 198,953

Int. Cl.³ G11C *11/40*

U.S. Cl. 365—155 **18 Claims**



1. A semiconductor memory device comprising a first transistor (TR1) of a first conductive type, a second transistor (TR2) of the first conductivity type having its emitter, collector and base respectively connected to the emitter, base and collector of the first transistor (TR1), a third transistor (TR5) of a second conductivity type opposite to said first conductivity type which has its emitter, base and collector respectively connected to a data line (DL) and the emitter and base of the second transistor (TR2), and first and second impedance elements (TR3, TR4) having their first ends respectively connected to the collectors of the first and second transistors (TR1, TR2) and their second ends commonly connected to a first row select line (WL), a fourth transistor (TR6 or TR8) of the first conductivity type having its base and emitter respectively connected to the collector and emitter of one of the first and second transistors (TR1, TR2) and a third impedance element (TR7) having its one end connected to the base of the fourth transistor (TR6 or TR8) and its other end connected to a second row select line (RL), said second row select line (RL) being selectively energized to supply a base current towards the base of the fourth transistor (TR6 or TR8), thus permitting the fourth transistor (TR6 or TR8) to be rendered conductive or nonconductive in accordance with the conduction state of the second transistor (TR2).

4,366,555

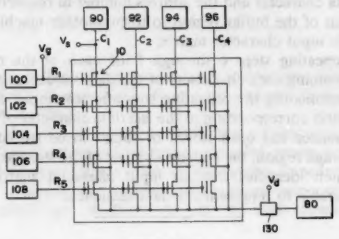
ELECTRICALLY ERASABLE PROGRAMMABLE READ ONLY MEMORY

Chenming Hu, Hercules, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Aug. 1, 1980, Ser. No. 174,770

Int. Cl.³ G11C *11/40*

U.S. Cl. 365—185 **15 Claims**



1. An EEPROM memory array of floating gate field effect semiconductor devices, each device having a floating gate and a control gate modulating conduction in a channel between source and drain regions, the devices organized in a matrix of columns and rows, the sources of devices on each column coupled to a common column conductor, the control gates of devices on each row coupled to a common row conductor, and the drains of all devices coupled to a common drain conductor, the array further comprising:

means for sensing conduction in the semiconductor devices; and

means for selectively floating common column conductors so as to program the array.

4,366,556

SEMICONDUCTOR MEMORY DEVICE

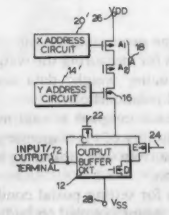
Mikio Kyomasu; Yoshiharu Nakao, and Mitsuo Nakayama, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 926,745, Jul. 21, 1978, abandoned. This application Mar. 31, 1980, Ser. No. 136,461

Claims priority, application Japan, Jul. 22, 1977, 52-88631

Int. Cl.³ G11C *7/00, 11/40*

U.S. Cl. 365—189 **6 Claims**



1. A semiconductor memory device comprising: a memory

cell including a memory element formed of a MOS transistor for performing a storing operation by accumulating an electric charge on an electrically insulating film; a gate circuit including a MOS transistor serially connected to said memory cell; a readout selection circuit including a MOS transistor serially connected to said MOS transistor included in said gate circuit; an output buffer circuit including a MOS transistor connected to said MOS transistor included in said readout selection circuit; a writing selection circuit including a MOS transistor connected in a parallel circuit relationship with said MOS transistors included in said readout selection circuit and said output buffer circuit; and a voltage source system connected to said memory cell, said gate circuit, said writing selection circuit, said readout selection circuit and said output buffer circuit for applying voltages to each of said MOS transistors to satify the relationship $V_G - V_{TH} > V_D$ for each of said MOS transistors, wherein V_G designates the gate voltage, V_{TH} designates the threshold voltage and V_D designates the drain voltage; the conductivity type of said MOS transistors included in said gate circuit being different from the conductivity type of said MOS transistor forming said memory element.

4,366,557

CIRCUIT ARRANGEMENT FOR THE RECOGNITION OF PREDETERMINED BINARY VALVES OF A SPECIFIC MINIMUM DURATION

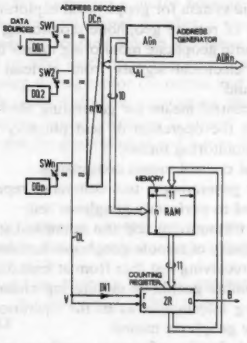
Gerhard Wilmers, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jun. 23, 1980, Ser. No. 162,159

Claims priority, application Fed. Rep. of Germany, Jul. 18, 1979, 2929079

Int. Cl.³ G11C *13/00*

U.S. Cl. 365—189 **7 Claims**



1. In a data transmission system of the type in which a plurality of data sources emit data to a common data line via respective switches, the improvement therein comprising:

a circuit arrangement for recognizing predetermined binary values of a specific minimum duration, said circuit arrangement including

an address decoder for receiving and decoding addresses and responsive thereto to selectively operate the switches,

an address generator connected to said address decoder and operable to periodically generate addresses identifying the data sources, and

counting means connected to said address generator, said counting means operable to assign a counter reading to each of said data sources and including a forward-backward counter connected to the data line and operable to count in a respective direction in response to the presence or absence of the predetermined binary values and produce recognition signals in response to reaching predetermined counter readings.

4,366,558

MEMORY DEVICE WITH FAST WORD-LINE-DISCHARGING-CIRCUITS

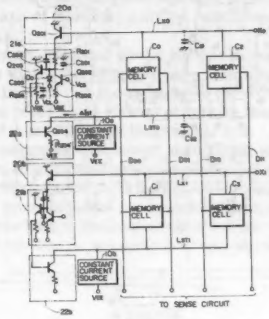
Noriyuki Homma, Kokubunji, and Kunihiko Yamaguchi, Sayama, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 18, 1980, Ser. No. 217,834

Claims priority, application Japan, Dec. 19, 1979, 54-164043

Int. Cl.³ G11C *7/02, 11/40, 8/02*

U.S. Cl. 365—189 **10 Claims**



1. A memory comprising:

a plurality of pairs of word lines, each pair of which comprises an upper word line and a lower word line,

a plurality of memory cells which are connected between the word lines of the respective pairs of word lines,

a plurality of voltage application means disposed in correspondence with said respective pairs of word lines for applying either a selection voltage or a non-selection voltage to the upper word lines of the corresponding pairs of word lines,

current sources which are disposed for said respective pairs of word lines and which are connected to the lower word lines in the corresponding pairs of word lines,

delay circuits which are connected to said voltage application means, and

switching means coupled to said delay circuits and said current sources for controlling magnitudes of currents to be supplied from said current sources to the corresponding lower word lines, depending upon levels of output signals of said delay circuits,

wherein said each delay circuit includes means for providing a first signal of a predetermined level while the output of the corresponding voltage application means exceeds a predetermined first voltage intermediate between said selection voltage and said non-selection voltage, and for providing a second signal obtained by delaying an output of said corresponding voltage application means, when said output of said voltage application means has changed in a direction from said predetermined first voltage towards said non-selection voltage.

4,366,559

MEMORY DEVICE

Tetsuo Misaizu, and Masumi Nakao, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 38,962, May 14, 1979, abandoned. This application Feb. 24, 1981, Ser. No. 237,815

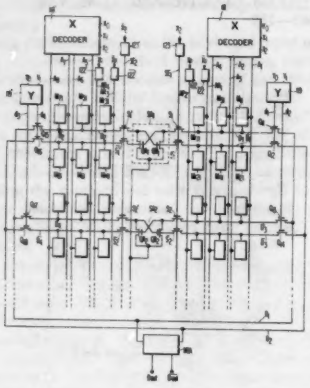
Claims priority, application Japan, May 12, 1978, 53-56763; May 17, 1978, 53-58471

Int. Cl.³ G11C *7/06*

U.S. Cl. 365—205 **24 Claims**

23. A semiconductor memory device comprising a sense amplifier having a first input terminal and a second input terminal, a first digit line arranged on a first side of said sense ampli-

fier, a second digit line arranged in parallel and adjacent to said first digit line, a third digit line arranged on a second and opposite side of said sense amplifier, a fourth digit line arranged in parallel and adjacent to said third digit line, a plurality of memory cells coupled to said digit lines, a first transfer gate arranged between said first digit line and said sense amplifier, a second transfer gate arranged between said second digit



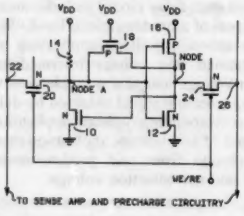
line and said sense amplifier, a third transfer gate arranged between said third digit line and sense amplifier, a fourth transfer gate arranged between said fourth digit line and said sense amplifier, means for receiving address signal, and means responsive to said address signal for enabling two of said first to fourth transfer gates thereby to electrically connect two of said first to fourth digit lines to said first and second input terminals of said sense amplifier.

4,366,560

POWER DOWN DETECTOR

Mark W. McDermott, Austin, and Neil B. Feldman, Manchaca, both of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 22, 1980, Ser. No. 189,974
Int. Cl.³ H02H *3/24*; G08B *21/00*; H03K *5/00, 3/26*
U.S. Cl. 365—228 **10 Claims**



1. A circuit for detecting supply voltage variations thereto comprising,

(a) binary means for indicating the circuit to be in a first or second state,

(b) means associated with said binary means for causing said binary means to assume a first of said first or second states upon application of a source of power to said circuit,

(c) means coupled to said binary means for forcing said binary means to the second of said first or second states, and

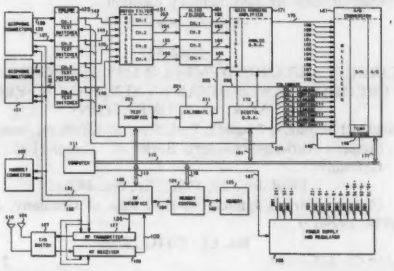
(d) further means coupled to said binary means and to said source of power for causing said binary means to reassume said first state in the event of reduction of voltage from said source of power to said circuit.

4,366,561

METHOD AND APPARATUS FOR TESTING A PLURALITY OF GEOPHONES

Fred T. Klein, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 30, 1978, Ser. No. 955,841
Int. Cl.³ G01V *1/22*
U.S. Cl. 367—77 **6 Claims**



1. A seismic system for geophysical exploration comprising:

a plurality of remote geophone monitoring means, each of said remote geophone monitoring means being adapted to receive electrical signals from at least one geophone means; and

a central control means for generating electrical signals for initiating the operation of said plurality of remote geophone monitoring means;

said central control means comprising:

means for generating a test command representative of a command to perform a geophone test;

means for transmitting said test command to at least one of said plurality of remote geophone monitoring means; and

means for receiving test data from at least one of said plurality of remote geophone monitoring means, said test data providing information as to the operational status of at least one geophone means;

each of said plurality of remote geophone monitoring means comprising:

means for receiving said test command from said central control means;

means for supplying a reference voltage;

a first switching means;

means for closing said first switching means in response to said test command to thereby supply said reference voltage through said first switching means to said geophone means;

means for measuring any voltage present between said geophone means and ground, the difference between said reference voltage and any voltage present between said geophone means and ground being representative of the leakage resistance between said geophone means and ground; and

means for transmitting the leakage resistance between said geophone means and ground as said test data to said central control means.

4,366,562

RODENT REPELLING DEVICE

John J. McGinty, 37294 Camp Creek Rd., Springfield, Oreg. 97477

Filed Feb. 23, 1981, Ser. No. 236,683
Int. Cl.[3] H04B 1/02
U.S. Cl. 367—139 4 Claims

1. A rodent deterring device for generating constant sonic waves over a period of several hours, said device/comprising,

a rod for inserted ground engagement,

a base including a cup-shaped member thereon,

a motor assembly including a motor housing loosely confined within said cup-shaped member, a motor in circuit with a power source/and having an output shaft, eccentric means on said shaft imparting erratic motion to the motor housing during motor operation, and

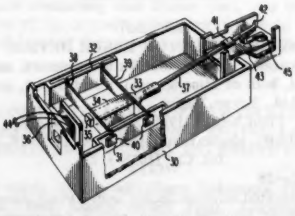
said motor housing forcefully contacting the cup-shaped member during motor operation to impart vibratory motion to the rod for generating sound waves in the ground.

4,366,563

VIDEO DISC STYLUS SUSPENSION APPARATUS

George H. N. Riddle, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 27, 1981, Ser. No. 238,983
Int. Cl.[3] G11B 11/00, 3/10
U.S. Cl. 369—43 13 Claims



1. In a video disc playback apparatus of the type having a base for rotatably supporting a disc record from which recorded information is recovered by a track following signal pickup stylus when relative velocity is established therebetween, said relative velocity being subject to undesirable variations, the combination comprising:

a carriage mechanism for supporting and translating said signal pickup stylus radially across the disc record;

a longitudinal stylus arm having said signal pickup stylus secured to a first end thereof and having a second end;

a permanent magnet;

a stylus arm suspension means having a first cavity for receiving and compliantly securing said second end of the longitudinal stylus arm thereto, having a second cavity for receiving said permanent magnet in a prescribed orientation relative to said stylus arm and having at least one elastic ribbon-like extension arranged substantially normal to the axis of said first cavity on each of opposite sides of said axis;

means for securing said elastic ribbons in said carriage assembly so that said ribbons are in a prescribed condition of elastic tensile stress and arranged so the stylus will engage the disc record, said ribbons permitting limited motion of the stylus arm along its longitudinal axis;

an electromagnetic coil having signal input terminals;

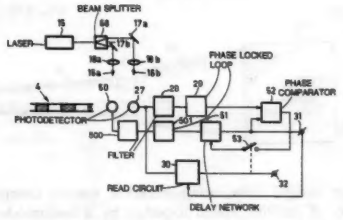
means for securing said electromagnetic coil in the carriage mechanism aligned with the permanent magnet in a manner to produce forces on the permanent magnet directed along the longitudinal axis of the stylus arm when velocity correction signals are applied to said signal input terminals.

4,366,564

APPARATUS FOR WRITING DIGITAL INFORMATION IN A DISC-SHAPED OPTICALLY READABLE RECORD CARRIER

Maarten R. de Haan, and Marino G. Carasso, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 5, 1980, Ser. No. 127,349
Claims priority, application Netherlands, Jan. 9, 1980, 8000123
Int. Cl.[3] G11B 7/00; H04N 5/76
U.S. Cl. 369—48 3 Claims



1. An apparatus for writing information in a optically detectable form on a recording medium having a substrate provided with a radiation-sensitive information layer and with information areas arranged in a spiral or circular track pattern and alternating with synchronization areas, said synchronization areas each containing an optically detectable address of an associated information area, said synchronization and information areas having an optically detectable periodic track modulation which is representative of a clock signal and which is of a frequency at which the power spectrum of the information to be recorded is at a substantially zero value, said apparatus comprising a light source, first means for directing a first light beam onto said information areas, means responsive to the clock signal for modulating said first light beam in order to record digitally coded information of fixed bit frequency in said information areas, first means for detecting radiation of said first beam which is reflected or transmitted by said medium, to produce a first electrical signal representative of the information recorded in said synchronization areas and of said clock signal, first means for extracting said clock signal from said first signal, second means for projecting a second light

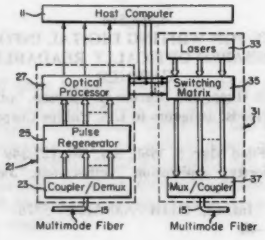
beam onto said track pattern behind said first light beam, second means for detecting radiation of said second beam which is reflected from or transmitted by said recording medium to produce a second electrical signal representitive of the information read by said second beam, second means for extracting said clock signal from said second signal, means for comparing the phase of said clock signals extracted from said first and second signals, respectively, to produce a control signal indicative of the phase difference therebetween, adjustable delay means responsive to said control signal for delaying the clock signal extracted by said second extracting means by an amount such that the clock signal extracted thereby is in phase with the clock signal extracted by said first extracting means when said first beam scans said synchronization areas and means for applying said clock signal to said modulating means.

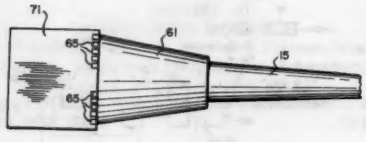
4,366,565

LOCAL AREA NETWORK OPTICAL FIBER DATA COMMUNICATION

Gerald J. Herskowitz, 7 Clover St., Tenafly, N.J. 07670

Filed Jul. 29, 1980, Ser. No. 173,654
Int. Cl.³ H04J *15/00*; H04B *9/00*
U.S. Cl. 370—1 **18 Claims**





1. An optical data communication system comprising a plurality of stations linked together by a multimode optical waveguide to form an optical signal, each of said stations comprising:

an array of lasers,

a switching matrix for controlling the propagation of radiation from said lasers into said optical waveguide,

a multiplexer/coupler for coupling radiation from said lasers to said waveguide, radiation from different lasers being coupled to different angular modes of propagation in said waveguide,

a coupler/demultiplexer for demultiplexing radiation received at said station from said waveguide,

an optical pulse regenerator coupled to said coupler/demultiplexer, said pulse regenerator having a threshold level above which the optical signal is optically amplified and reshaped and below which the signal is suppressed, and

an optical processor to which is applied the optical signal from the pulse regenerator, said optical processor including optical logic circuits for detecting the address of data packets contained in signals transmitted along said optical waveguide and for routing said signals either to a host computer at said station or to said switching matrix.

4. An optical multiplexer/coupler for coupling single mode optical signals to a multimode optical waveguide said multiplexer/coupler comprising:

a planar lens having a first major surface which abuts the end of said multimode optical waveguide, said planar lens having an index of refraction which decreases with the square of the radial distance from the optical axis of said waveguide, and

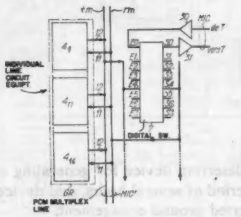
a plurality of optical waveguides contacting a second major surface of said planar lens at different radial distances from said optical axis.

4,366,566

SYSTEM FOR INTERCONNECTING SUBSCRIBERS LINES TO AN AUTOMATIC DIGITAL TELEPHONE SWITCHING SYSTEM

Jean-Yves Cochennec, Rue de Kervenez, 22560 Trebeurden, France

Filed Dec. 4, 1979, Ser. No. 100,008
Claims priority, application France, Aug. 12, 1978, 78 35483
Int. Cl.³ H04Q *11/00*
U.S. Cl. 370—53 **5 Claims**



1. A system for cross connecting individual subscriber line circuits to their assigned positions in a digital switching system, said digital switching system comprising a plurality time division multiplex switches interconnected by incoming and outgoing time division highways, said switches being connected in multiple to said highways, each of said subscriber line circuits comprising means individually associated with each of said subscriber lines for performing interfacing functions, two-to-four wire differential coupling means having its four wire side coupled to analog-to-digital and digital-to-analog converter means, a digital output on said converter means being connected to an outgoing highway means, a digital input on said converter means being connected to an incoming highway, means for allocating to each of said line circuit means one incoming and one outgoing channel on said incoming and outgoing highways, and digital switch means for programming interconnections between said incoming and outgoing channels.

4,366,567

SEMICONDUCTOR LASER DEVICE

Tadashi Fukuzawa, Tokyo; Michiharu Nakamura, and Susumu Takahashi, both of Hinodemachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 5, 1980, Ser. No. 204,231
Claims priority, application Japan, Nov. 14, 1979, 54/146578
Int. Cl.³ H01S *3/19*
U.S. Cl. 372—38 **11 Claims**

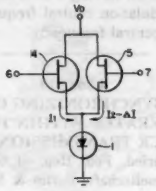
1. An integrated semiconductor laser device comprising:

(a) a layered semiconducting region comprising stacked semiconductor layers forming an optical confinement region which is capable of laser operation;

(b) means for injecting current into said optical confinement region;

(c) first switching means for supplying said means for injecting with a bias current having a value near a threshold current value for laser operation; and

(d) second switching means for supplying a current to said means for injecting, to be superimposed on said bias current supplied by said first switching means, including an external input for controlling the amount of current fed by said second switching means.



4,366,568

SEMICONDUCTOR LASER

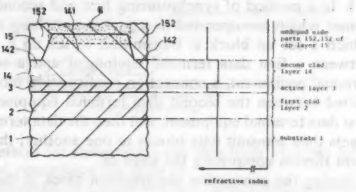
Hirokazu Shimizu, Toyonaka; Kunio Itoh, Uji; Takashi Sugino, and Masaru Wada, both of Takatsuki, all of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Kadoma, Japan

Filed Dec. 18, 1980, Ser. No. 217,652

Claims priority, application Japan, Dec. 20, 1979, 54-166508; May 19, 1980, 55-66774

Int. Cl.³ H01S *3/19*

U.S. Cl. 372—45 **7 Claims**



1. In a semiconductor laser, a structure comprising

a semiconductor substrate and a set of epitaxial layers formed on said semiconductor substrate,

wherein said set of epitaxial layers includes

a first layer formed on said substrate,

an active layer formed on said first layer,

a second layer, which is formed on said active layer and has a stripe-shaped thicker part and thinner parts on both sides of said thicker part, and

a third layer formed on said second layer and having a stripe-shaped region as a current injection region of a same conductivity type as that of said second layer only at the part contacting said thicker part, and having other regions of the opposite conductivity type to that of said second layer at the parts contacting said thinner part.

4,366,569

SEMICONDUCTOR LASER DEVICE INCLUDING AN ARRANGEMENT FOR PREVENTING LASER DEGRADATION CAUSED BY EXCESSIVE CURRENT FLOW

Motohisa Hirao, Tokyo; Michiharu Nakamura, Hinodemachi; Atsutoshi Doi, Ohme; Shinji Tsuji, Kokubunji; Yutaka Takeda, Ohme, and Takao Mori, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

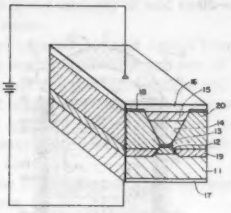
Filed Sep. 26, 1980, Ser. No. 191,293

Claims priority, application Japan, Sep. 28, 1979, 54-124118

Int. Cl.³ H01S *3/19*

U.S. Cl. 372—46 **5 Claims**

1. In a semiconductor laser device including at least an active region comprised of a semiconductor material and a semiconductor region comprised of a material having a different composition from that of said active region and confining said active region, said semiconductor laser device characterized in that at least one p-n junction is formed inside said confining region in parallel to said active region, wherein the impurity concentration of said region having said p-n junction is set to permit at least a portion of a current flowing to said active region to flow through regions other than said active region via said p-n junction when said current reaches a predetermined level which is less than a level at which said current flow causes degradation of said semiconductor laser device.



4,366,570

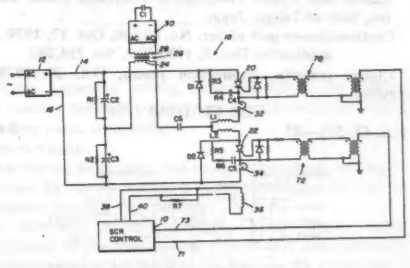
SERIES INVERTER FOR CAPACITOR CHARGING

George L. Bees, Natick, Mass., assignor to Candela Corporation, Natick, Mass.

Filed Nov. 13, 1980, Ser. No. 206,389

Int. Cl.³ H02M *7/515*

U.S. Cl. 372—70 **14 Claims**



1. A laser firing circuit having a series inverter, high voltage capacitor charging circuit comprising electronic switches connected in a push pull configuration between a dc supply and a reactance load characterized by:

means for sensing an electrical parameter of each electronic switch circuit the timing of which provides a direct indication of the resonant frequency of the circuit and of the timing of current flow through the electronic switches;

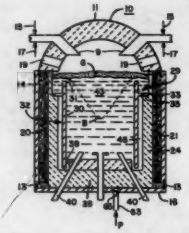
gate control means responsive to the sensed electrical parameters for gating each electronic switch only after the other has settled to a stable off condition and for varying the gating frequency to closely follow the resonant frequency of the charging circuit as that frequency varies with the charge on the capacitor; and

means for disabling the gate control means when the charged capacitor voltage reaches a predetermined level.

4,366,571
ELECTRIC FURNACE CONSTRUCTION

Ronald W. Palmquist, Horseheads, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Mar. 16, 1981, Ser. No. 243,811
Int. Cl.³ C03B 5/027
U.S. Cl. 373—30 **96 Claims**

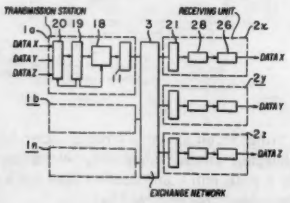


1. A furnace for melting thermoplastic material comprising: a vessel having a bottom wall and a first upstanding peripheral sidewall, liner means concentrically disposed within said vessel having an upstanding sidewall, spaced apart from said first sidewall and extending continuously from a lower portion to near an upper portion of said first sidewall for containing convection flow of said thermoplastic material therewithin and for protecting said vessel from excessive corrosion by the molten thermoplastic material, and peripherally located means partly associated with at least one of said vessel and said liner means for providing a relatively cool peripheral zone wherein the temperature of the thermoplastic material within said zone is sufficiently low so that movement thereof is minimized and corrosion of the vessel is thereby inhibited.

4,366,572
DATA TRANSMISSION SYSTEM

Toshiharu Takatsuki, Tokyo; Ken-ichi Fujiwara, Amagasaki; Sinobu Yanagisawa, Amagasaki, and Shigeru Okamura, Amagasaki, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha and Nippon Telegraph & Telephone Public Corporation, both of Tokyo, Japan

Continuation-in-part of Ser. No. 85,640, Oct. 17, 1979. This application Dec. 8, 1980, Ser. No. 214,282
Claims priority, application Japan, Oct. 20, 1978, 53-129080
Int. Cl.³ H04B 1/04
U.S. Cl. 375—37 **5 Claims**



1. In a data transmission system having a transmission station for modulating plural kinds of input data and for transmitting the modulated data; and a receiving station for receiving each kind of data transmitted from said transmission station, the improvement comprises:

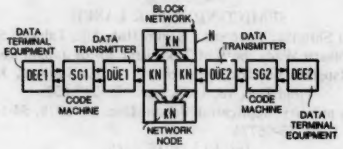
said transmission system having an encoder for responding to a demand from said receiving station to provide said input data in a pulse series code, and a modulator for modulating the output of said encoder, in which each modulation central frequency corresponds to a respective kind of the data and wherein said modulation central frequency is switched depending upon the kind of the data; and,

said receiving station having a demodulator in which only one of the modulation central frequencies is used as the demodulation central frequency.

4,366,573
METHOD FOR SYNCHRONIZING CODE MACHINES WHICH ARE OPERATED WITHIN THE FRAMEWORK OF A BLOCK TRANSMISSION NETWORK

Walter Rauch, Neuried, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 22, 1980, Ser. No. 180,328
Claims priority, application Fed. Rep. of Germany, Sep. 27, 1979, 2939159
Int. Cl.³ H04L 7/00
U.S. Cl. 375—106 **4 Claims**



1. In a method of synchronizing first and second code machines which are operated in a packet switching network, in which a set up block is transmitted to set up a connection between a first data terminal equipment and a second data terminal equipment, a connection confirmation block is transmitted between the second data terminal equipment and the first data terminal equipment, and then the data terminal equipments then transmit data blocks to one another, the improvement therein comprising the steps of:

storing the connection confirmation block in the first code machine of the first data terminal equipment;

after receiving the connection confirmation block, transmitting a code machine synchronization block from one code machine to the other to synchronize code computers in the code machines; and

after synchronization of the code computers, relaying the connection confirmation block to the first data terminal equipment.

4,366,574
SHADOWGRAPHIC SLIT SCANNER WITH VIDEO DISPLAY

Edwin R. Hill, Chardon, Ohio, assignor to Technicare Corporation, Solon, Ohio

Filed Oct. 31, 1980, Ser. No. 202,504
Int. Cl.³ G03B 41/16
U.S. Cl. 378—99 **9 Claims**

7. A method of forming a representation of a shadowgraphic image comprising:

(a) irradiating an object with a beam of penetrating radiation that traverses the object;

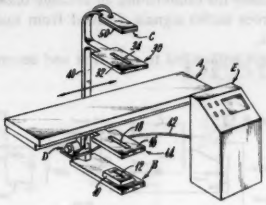
(b) detecting the intensity of the beam of radiation which has traversed the object with a plurality of columns of detectors, each detector producing an output signal that is proportional to the intensity of the detected radiation;

(c) storing the output signals from each column of detectors in each of a plurality of columns or groups of storage units;

(d) causing an incremental amount of relative movement between the object and the plurality of columns; and

(e) during the irradiation, repeating steps (b), (c), and (d), the respective columns or groups of storage units during each

repetition storing output signals from a column of detectors other than the column of detectors the output signals



of which had been stored prior to the previous incremental amount of relative movement.

4,366,575

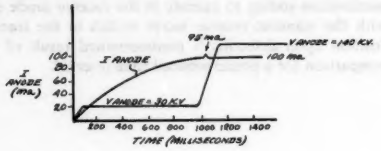
METHOD AND APPARATUS FOR CONTROLLING X-RAY TUBE EMISSIONS

Ronald F. Bax, Columbia, Md., assignor to Pfizer Inc., New York, N.Y.

Continuation of Ser. No. 75,187, Sep. 13, 1979, abandoned. This application Sep. 25, 1981, Ser. No. 305,842

Int. Cl.³ A61B *6/00*; H05G *1/26*

U.S. Cl. 378—110 **19 Claims**



19. A method for stabilizing x-ray flux from an x-ray tube, said method comprising the steps of:

initially establishing a relatively low voltage stabilized operating point for said x-ray tube with a controlled current approximately equal to the final desired full operating current level and never substantially in excess of the final desired full operating current level, and

thereafter raising the x-ray tube stabilized operating point to its desired full operating voltage and current levels.

4,366,576

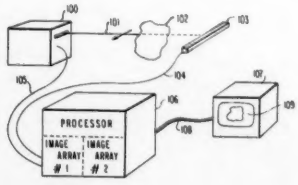
PENETRATING RADIANT ENERGY IMAGING SYSTEM WITH MULTIPLE RESOLUTION

Martin Annis, Cambridge, Mass., assignor to American Science and Engineering, Inc., Cambridge, Mass.

Filed Nov. 17, 1980, Ser. No. 207,483

Int. Cl.³ G03B *41/16*

U.S. Cl. 378—146 **8 Claims**



1. A penetrating radiant energy imaging system comprising:

a source of penetrating radiant energy,

sweeping means for forming a pencil beam of penetrating radiant energy for repeatedly sweeping said pencil beam across a detector field; beam cross-section control means to control the cross-section of said pencil beam between at least a first smaller cross-section and a second larger cross-section, in a fixed pattern, as said beam illuminates an object,

detector means located at the detector field for generating signals related to the intensity of said beam impinging on said detector means,

processor means responsive to said signals from said detector means for separately identifying sets of signals produced by beams of different cross-section and for developing from said signals an image array corresponding to each of said pencil beams of different cross-section, whereby an image array is developed for each pencil beam cross-section, and

display means for developing an image in response to said processor means.

4,366,577

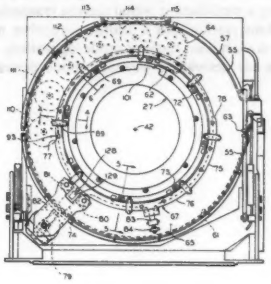
COMPUTED TOMOGRAPHY SYSTEM CABLE RETRACTOR

Richard T. Brandt, New Berlin, Wis., assignor to General Electric Company, Schenectady, N.Y.

Filed Jul. 13, 1981, Ser. No. 282,897

Int. Cl.³ H05G *1/02*; A61B *6/00*

U.S. Cl. 378—194 **6 Claims**



1. X-ray apparatus having improved means for guiding cables running between stationary parts and electrical devices on rotating parts, comprising:

support means,

a base having an opening and being mounted on the support means for rotation about a nominally horizontal axis extending through the opening,

said electrical devices including X-ray source means mounted to the base on one side of said axis and X-ray detector means mounted to the base on the other side of said axis for jointly rotating about a space for being occupied by an X-ray examination subject,

inner axially extending drum means fastened to said base for rotation therewith and having a radially outwardly presented peripheral surface concentric to and radially spaced from said axis, said drum means having an opening for cables to pass through,

outer axially extending fixedly mounted drum means having a radially inwardly presented peripheral surface radially spaced from and concentric to said surface on said inner drum means to define a circular channel therewith, said second drum means having an opening for cables to pass through,

a group of cables and means fastening said group near said opening in the fixedly mounted outer drum means and near said opening in the rotatable inner drum means, said cables in the group having sufficient length to form a loop

that moves angularly in said channel when said inner drum is being rotated,

disk means presented toward said channel and means mounting said disk means for rotation independently of said inner drum means,

a plurality of pulleys mounted to said disk means for rotation about parallel axes extending into said channel, the pulleys being angularly spaced and one of the pulleys being disposed in said cable loop and other of the pulleys being disposed between portions of the cable extending away from the loop,

means for driving said base and said inner drum thereon rotationally and means for simultaneously driving said disk means rotationally for the angular motion of the disk to be the required fraction of the angular motion of the inner drum that results in said pulleys having an angular motion corresponding to the angular motion of the loop in the cables.

4,366,578

TRANSMIT/RECEIVE MODE PROTECTION ARRANGEMENT

George B. Foster, and David E. Harris, both of Columbus, Ohio, assignors to Foster Airdata Systems Inc., Columbus, Ohio

Filed Feb. 19, 1981, Ser. No. 235,990

Int. Cl.³ H04B *1/46*

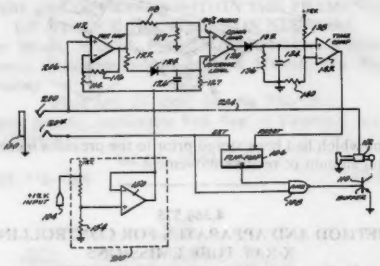
U.S. Cl. 455—79 **7 Claims**

1. An apparatus for controlling the transmit/receive operation of a communications station having a microphone element for generating a modulating signal during transmission by said communications station and a transmit/receive mode switch for selecting transmit or receive mode operation, comprising:

first means for activating transmit mode operation of said communications station in response to the actuation of said transmit/receive mode switch to a transmit position thereof;

second means for establishing an average background signal level from audio signals derived from said microphone element;

third means connected to said first and second means, said



third means including means for (a) comparing an existing level of audio signal from said microphone element with the average background signal level established by said second means and (b) causing said first means of the communications station to operate in the receive mode even with the transmit/receive mode switch in the transmit position upon detecting a predetermined result of said comparison for a predetermined time interval.

DESIGN PATENTS

GRANTED DEC. 28, 1982

ERRATA

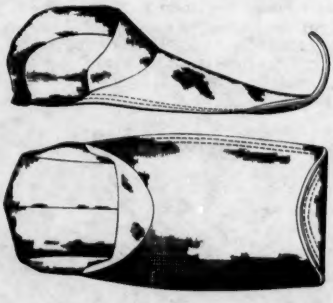
For CLASS	See PATENT NO.
D04–038	267,367
D04–038	267,368

DESIGNS

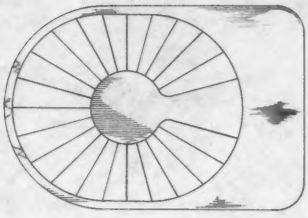
DECEMBER 28, 1982

267,362
PASTRY SHELL
Jean-Jacques P. R. Dupas, and Philippe D. R. Dupas, both of 3 Allee Charles Deloncle, 94300 Vincennes, France
Filed Sep. 10, 1980, Ser. No. 185,999
Claims priority, application France, Mar. 20, 1980, 80 0896
Term of patent 14 years
Int. Cl. D1—*01*
U.S. Cl. D1—2

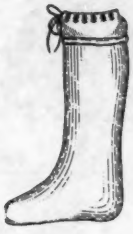
267,363
WEARING APPAREL CAP
Karen A. Wilson, c/o P.D.A., 85 Pike Pl., Apt. 223, Seattle, Wash. 98101; Paul D. Huber, 240 SW. Francis, Issaquah, Wash. 98027, and Leone C. Ewoldt, 1005 N. 36th St., Seattle, Wash. 98103
Filed Sep. 29, 1980, Ser. No. 191,861
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—244



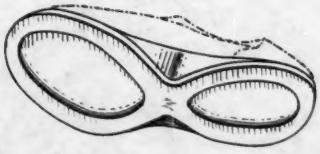
267,364
VISORED HAT
Rudy De Lozada, 84 Skyline Dr., Daly City, Calif. 94118
Filed Mar. 10, 1980, Ser. No. 128,605
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—247



267,365
GALOSH
Nancy J. Hansen, 3321 Solitude Pl., Fort Wayne, Ind. 46802
Filed Sep. 10, 1980, Ser. No. 185,790
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—275



267,366
SHOE SOLE
Howard Davis, 45 W. 132nd St., New York, N.Y. 10037
Filed Aug. 27, 1980, Ser. No. 181,797
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—320

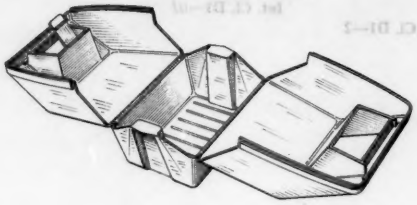


267,367
PAINT ROLLER
Kiyoshi Hori, Osaka, Japan, assignor to Nippon Paint Co., Ltd., Osaka, Japan
Filed Jun. 19, 1981, Ser. No. 275,224
Claims priority, application Japan, Dec. 19, 1980, 55-53451
Term of patent 14 years
Int. Cl. D4—*04;* D8—*05*
U.S. Cl. D4—38.1

267,368
PAINT ROLLER
Kiyoshi Hori, Osaka, Japan, assignor to Nippon Paint Co., Ltd., Osaka, Japan
Filed Jun. 19, 1981, Ser. No. 275,226
Claims priority, application Japan, Dec. 19, 1980, 55-53453
Term of patent 14 years
Int. Cl. D4—*04;* D8—*05*
U.S. Cl. D4—38.1

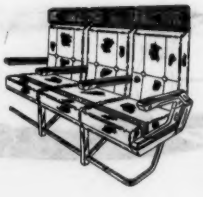
267,369
HANDBAG
Wanda D. Blanchard, Lot 162, 10759 E. Admiral Pl., Tulsa, Okla. 74116
Filed Jun. 3, 1980, Ser. No. 156,168
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—44

267,370
CONTAINER FOR FILING CARDS AND THE LIKE
Merlin Cline, Etobicoke, Canada, assignor to Madison Marketing Limited, Toronto, Canada
Filed Jun. 17, 1980, Ser. No. 160,242
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—73



267,371
SWIVEL CHAIR
Carlos L. Lopez-Benitez, Jamestown, N.C., assignor to The Boling Company, Siler City, N.C.
Filed Jun. 2, 1980, Ser. No. 155,852
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—31

267,372
MULTI-PASSENGER AIRCRAFT SEAT
William A. Long, Harwinton; Ward E. Fischer, Torrington, and Rene J. Brunelle, Wolcott, all of Conn., assignors to UOP Inc., Des Plaines, Ill.
Filed Mar. 31, 1980, Ser. No. 135,846
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—48



267,373

DISPLAY RACK FOR CLOTHING AND ACCESSORIES

Irene A. Behrens, 3151 Belden Dr., Hollywood, Calif. 90068

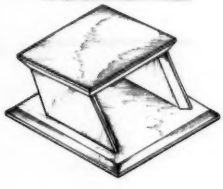
Filed Jun. 30, 1980, Ser. No. 164,911
Term of patent 14 years
Int. Cl. D06—*06*
U.S. Cl. D6—85

267,374

SPEAKER STAND OR SIMILAR ARTICLE

Theodore R. Karson, 6624 W. Irving Park Rd., Chicago, Ill. 60634

Filed Jul. 16, 1980, Ser. No. 169,498
Term of patent 14 years
Int. Cl. D06—*06*
U.S. Cl. D6—85



267,375

HOLDER

Richard J. Lionetti, 128 Perry Ave., Norwalk, Conn. 06850

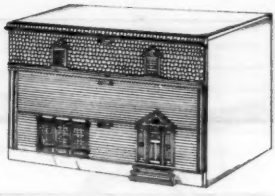
Filed Jun. 4, 1980, Ser. No. 156,325
Term of patent 14 years
Int. Cl. D6—*06*; D11—*02*; D7—*06*; D19—*06*
U.S. Cl. D6—130

267,376

DRESSER OR SIMILAR ARTICLE

Sidney A. Lenger, Jr., Jamestown, N.C., assignor to The Singer Company, Stamford, Conn.

Filed Sep. 12, 1980, Ser. No. 186,812
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—154



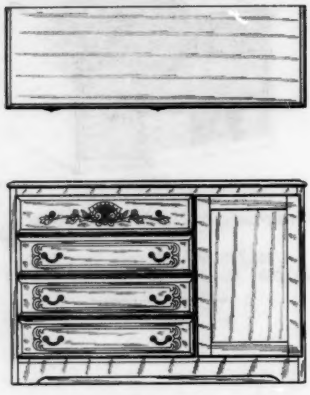
267,377

CHEST OF DRAWERS OR SIMILAR ARTICLE

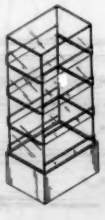
Henry W. Mower, Stevens Point, Wis.; Allen Seymour, Clayton, Ohio; Jerome P. Koziatek, Hinckley, Ohio, and Joseph G. Lendvay, Ravenna, Ohio, assignors to Questor Corporation, Toledo, Ohio

Filed Oct. 16, 1980, Ser. No. 197,486
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—154

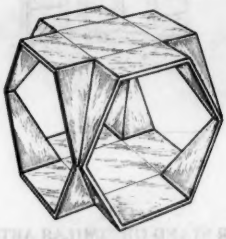
267,378
CHEST OR SIMILAR ARTICLE
Henry W. Mower, Stevens Point, Wis.; Allen Seymour, Clayton, Ohio; Jerome P. Koziatek, Hinckley, Ohio, and Joseph G. Lendvay, Ravenna, Ohio, assignors to Questor Corporation, Toledo, Ohio
Filed Oct. 16, 1980, Ser. No. 197,765
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—154



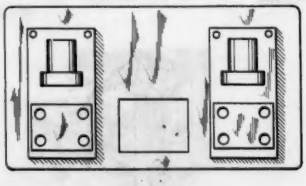
267,379
COSMETIC DISPLAY UNIT
Russell K. Winter, Crownsville, Md., assignor to Russell William, Ltd., Columbia, Md.
Filed Nov. 21, 1980, Ser. No. 209,046
Term of patent 14 years
Int. Cl. D06—*06*
U.S. Cl. D6—175



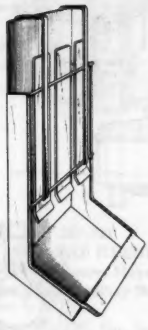
267,380
TABLE
John W. Rozsnyai, 4272 Sheppard Dr., Las Vegas, Nev. 89121
Filed Apr. 22, 1980, Ser. No. 142,775
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—179



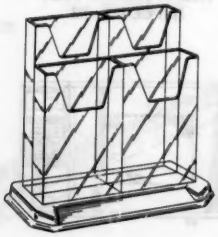
267,381
INDUSTRIAL WORK TABLE
Charles P. Miller, 41 Richards Ave., North Attleboro, Mass. 02760
Filed Nov. 3, 1980, Ser. No. 203,000
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—179



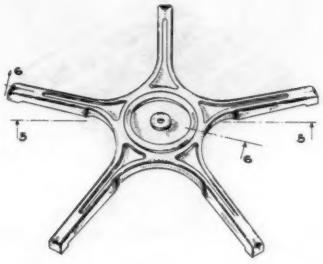
267,382
COMBINED PACKAGE DISPLAY AND DISPENSING RACK
Wolff Heinrichsdorff, Hösel, Fed. Rep. of Germany, assignor to Nabisco Brands, Inc., New York, N.Y.
Filed Nov. 5, 1979, Ser. No. 91,669
The portion of the term of this patent subsequent to Apr. 20, 1996, has been disclaimed.
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—181



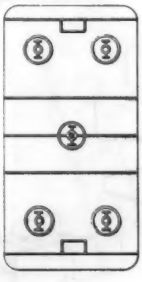
267,383
DISPLAY HOLDER FOR BROCHURES AND THE LIKE
Richard M. Liptak, Parma Heights, and Robert S. Liptak, Brecksville, both of Ohio, assignors to Integral Design, Inc., Cleveland, Ohio
Filed Apr. 7, 1980, Ser. No. 137,767
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—184



267,384
CHAIR BASE
James K. Faull, Rte. #1, Box 156, Enon Valley, Pa. 16120
Filed Jan. 2, 1981, Ser. No. 222,519
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—196



267,385
DOOR MAT OR SIMILAR ARTICLE
Victor T. Burt, 900 W. Georgia St., Vancouver, B.C. V6C 2W9, Canada
Filed Jul. 16, 1980, Ser. No. 169,271
Term of patent 14 years
Int. Cl. D6—*11*
U.S. Cl. D6—210



267,386

TRIVET

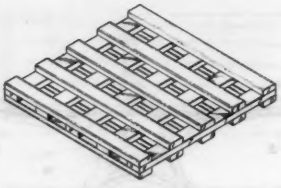
Edward H. Kneale, III, 335 Pleasant Pines Ave., Centerville, Mass. 02632, assignor to Edward H. Kneale, III, Hyannis, Mass.

Filed Feb. 5, 1981, Ser. No. 232,291

Term of patent 14 years

Int. Cl. D07—*06*

U.S. Cl. D7—45



267,387

PACKAGE CONDIMENT HOLDER

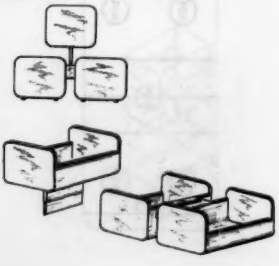
Mark Koch, Cincinnati, Ohio, assignor to Sweet 'N Natural Corp., New York, N.Y.

Filed Mar. 12, 1980, Ser. No. 129,621

Term of patent 14 years

Int. Cl. D07—*99*

U.S. Cl. D7—52



267,388

MULTI-COOKER

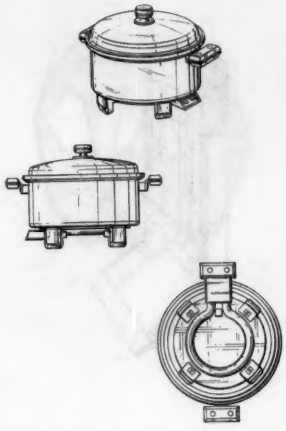
Carl R. Spoeth, Jr., Kewaskum, and Russell D. Hiatt, West Bend, both of Wis., assignors to Dart Industries Inc., Northbrook, Ill.

Filed Dec. 15, 1980, Ser. No. 216,052

Term of patent 14 years

Int. Cl. D07—*02*

U.S. Cl. D7—360



267,389

MICROWAVE OVEN

Yoshio Suganoya, and Takao Miyake, both of Osaka, Japan, assignors to Sharp Kabushiki Kaisha (Sharp Corporation), Osaka, Japan

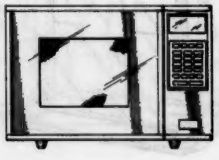
Filed Jan. 9, 1980, Ser. No. 110,642

Claims priority, application Japan, Jul. 26, 1979, 54-31582

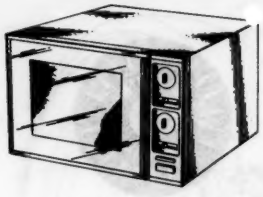
Term of patent 14 years

Int. Cl. D07—*02*

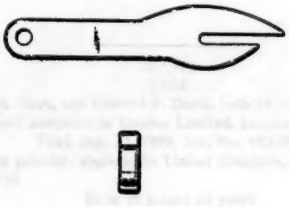
U.S. Cl. D7—351



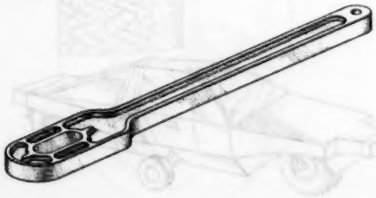
267,390
MICROWAVE OVEN
Takao Miyake; Masayoshi Kawaishi, and Masafumi Numano, all of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed Jul. 21, 1980, Ser. No. 170,542
Claims priority, application Japan, Feb. 4, 1980, 55-3693
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—351



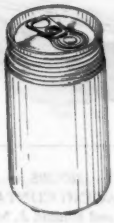
267,391
PULL TAB OPENER
Daniel E. Kroeger, 511 Sycamore, Hayward, Calif. 94544, and Robert C. Anderson, 6215 Manthey Rd., French Camp, Calif. 95231
Filed Sep. 29, 1980, Ser. No. 191,554
Term of patent 14 years
Int. Cl. D07—*99*
U.S. Cl. D8—18



267,392
GAS VALVE SHUTOFF WRENCH
Vernon M. Hildebrandt, 19102 Crossdale, Cerritos, Calif. 90701
Filed Dec. 8, 1980, Ser. No. 213,826
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—28

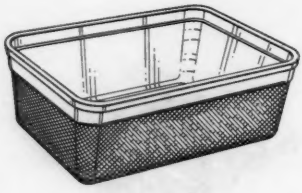


267,393
CAN
Robert J. Gruodis, Oak Lawn; William T. Franz, Palos Park, and Edward J. Hayes, Elmhurst, all of Ill., assignors to The Continental Group, Inc., New York, N.Y.
Filed Dec. 8, 1980, Ser. No. 214,153
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—370



267,394
DISPLAY CONTAINER
Richard M. Liptak, Parma Heights, and Thomas P. Liptak, Independence, both of Ohio, assignors to Integral Design, Inc., Cleveland, Ohio
Filed Apr. 7, 1980, Ser. No. 137,562
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—415

267,395
PACKAGING CONTAINER
Van D. Groenewold, 1143 W. Townley, Phoenix, Ariz. 85021; Hubert E. Christian, 4019 E. Fairmount, Phoenix, Ariz. 85018, and James P. Schwartz, 13435 N. Canterbury, Phoenix, Ariz. 85023
Filed Oct. 5, 1979, Ser. No. 82,380
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—425

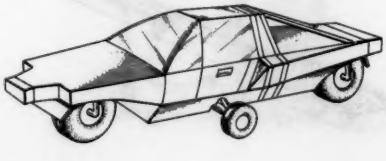


267,396
PACKAGING CONTAINER
Paul E. McDuffee, Sr., and Ronald J. McDuffee, both of Elgin, Ill., assignors to Pic-A-Pear Products Co., Elgin, Ill.
Filed Dec. 9, 1980, Ser. No. 214,483
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—429

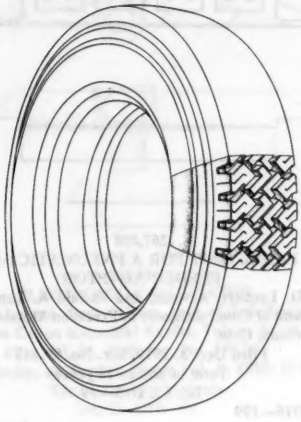
267,397
SANITARY SHIELD FOR A BOTTLE OR THE LIKE
Donald B. Mitchell, 515 W. Highland, Phoenix, Ariz. 85013
Filed Oct. 14, 1980, Ser. No. 196,185
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—444

267,398
WREATH
Robert J. Wortock, 215 Meriburr La., Racine, Wis. 53402
Filed Feb. 7, 1980, Ser. No. 119,449
Term of patent 14 years
Int. Cl. D11—*05*
U.S. Cl. D11—120

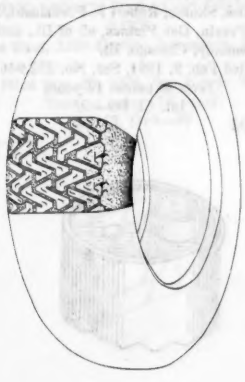
267,399
URBAN VEHICLE
Christopher R. Kuhns, and Anthony W. Kuhns, both of 132 Fremont Pl., Los Angeles, Calif. 90005
Filed Oct. 21, 1980, Ser. No. 199,319
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D12—92



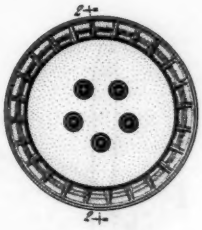
267,400
TIRE
Guy Amarger, Clermont-Ferrand, France, assignor to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France
Filed Aug. 26, 1980, Ser. No. 181,645
Claims priority, application France, Feb. 26, 1980, 17
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—147



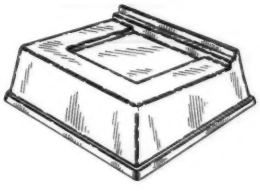
267,401
TIRE
Claude A. Hart, and Edward P. Davis, both of Sutton Coldfield, England, assignors to Dunlop Limited, London, England
Filed Sep. 23, 1980, Ser. No. 189,567
Claims priority, application United Kingdom, Apr. 11, 1980, 80/994444
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—151



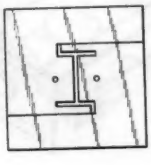
267,402
VEHICLE WHEEL
John R. Schinella, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Apr. 7, 1980, Ser. No. 137,738
Term of patent 7 years
Int. Cl. D12—*16*
U.S. Cl. D12—211



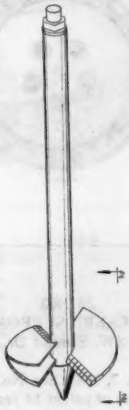
267,403
SPEAKER SUPPORT
Ripley W. Gage, 2646 SW. Summit Dr., Lake Oswego, Oreg. 97034
Filed Oct. 7, 1980, Ser. No. 194,821
Term of patent 14 years
Int. Cl. D14—*99*
U.S. Cl. D14—38



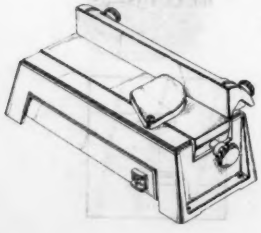
267,404
BEAM COUNTERWEIGHT FOR JACK PUMPS
Gregory D. Cook, Duncan, Okla., assignor to Cook Machine Company, Duncan, Okla.
Filed Oct. 14, 1980, Ser. No. 196,323
Term of patent 14 years
Int. Cl. D15—*02*
U.S. Cl. D15—7



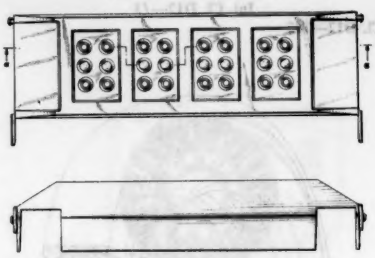
267,405
VEGETATION SCALPING AND EARTH BORING TOOL
Alvin K. Wilson, P.O. Box 162, Elmira, Oreg. 97437
Filed Aug. 11, 1980, Ser. No. 177,051
Term of patent 14 years
Int. Cl. D15—*04*
U.S. Cl. D15—21



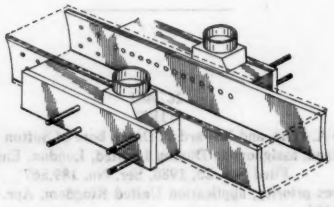
267,406
COMBINED JOINTER AND PLANER
Thomas G. Glore, Easley, S.C., assignor to The Singer Company, Stamford, Conn.
Filed Nov. 24, 1980, Ser. No. 209,819
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—127



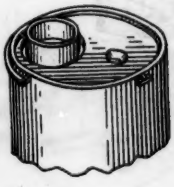
267,407
MOLD FOR BUILDING BLOCK UNITS
Walter Mitchko, 337 Elwood Rd., East Northport, N.Y. 11731
Filed Nov. 3, 1980, Ser. No. 203,734
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—136



267,408
SIDE PANEL UNIT FOR A PNEUMATIC ARTICLE FEEDER ADAPTOR
Richard D. Lenhart, Arwada, and Ronald A. Lenhart, Lakewood, both of Colo., assignors to Precision Metal Fabricators, Inc., Arvada, Colo.
Filed Dec. 3, 1979, Ser. No. 99,643
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D15—199



267,409
RESEALABLE TONER CONTAINER
Maynard C. Gross, Skokie; Robert F. Porazinski, Norridge, and Raymond J. Precin, Des Plaines, all of Ill., assignors to Bell & Howell Company, Chicago, Ill.
Filed Feb. 9, 1981, Ser. No. 232,946
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D16—32

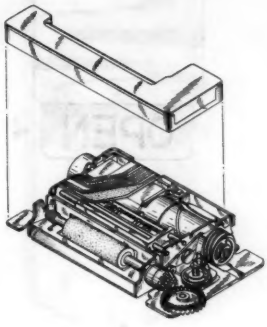


267,410
GUITAR STRING TUNING DEVICE HOUSING
Robert J. Spercel, 3214 W. 139 St., Cleveland, Ohio 44111
Division of Ser. No. 838,115, Sep. 9, 1977, Pat. No. Des. 256,471. This application May 12, 1980, Ser. No. 182,867
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D17—20

267,411
ELECTRONIC CALCULATOR
Takashi Hirata, and Kunio Hirase, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 31, 1980, Ser. No. 174,001
Claims priority, application Japan, Feb. 8, 1980, 55-3910
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D18—7

267,412
CALCULATING DEVICE FOR CONVERSIONS OR THE LIKE
Gerrit A. Van Exel, 2300 Camino Escondido, Fullerton, Calif. 92633
Filed Nov. 29, 1979, Ser. No. 98,709
Term of patent 14 years
Int. Cl. D19—*99*
U.S. Cl. D18—10

267,413
PRINTER FOR AN ELECTRONIC CALCULATOR
Masahiko Mori, Shiojiri, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo and Shinshu Seiki Kabushiki Kaisha, Nagano, both of, Japan
Filed Oct. 8, 1980, Ser. No. 195,040
Claims priority, application Japan, Apr. 18, 1980, 55-15287
Term of patent 14 years
Int. Cl. D18—*02*
U.S. Cl. D18—13

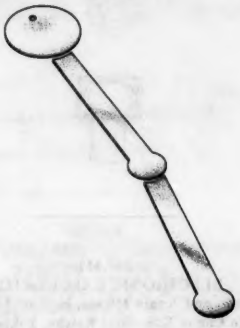


267,414
HORIZONTAL PAPER ORGANIZER
Charles R. Tyke, Ada, Mich., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Dec. 4, 1980, Ser. No. 213,697
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—92

267,415
POINT OF PURCHASE SIGN
Richard P. Hornblad, Shorewood, Wis., assignor to Display Corporation International, Milwaukee, Wis.
Filed Nov. 12, 1980, Ser. No. 205,933
Term of patent 14 years
Int. Cl. D20—*03*
U.S. Cl. D20—10

267,416
DISPLAY SIGN HOLDER
Richard M. Liptak, Parma Heights, and Robert S. Liptak, Brecksville, both of Ohio, assignors to Integral Design, Inc., Cleveland, Ohio
Filed Apr. 7, 1980, Ser. No. 137,795
Term of patent 14 years
Int. Cl. D20—*03*
U.S. Cl. D20—43

267,417
GOLF GAME PUTTING CARPET
William C. Newton, 49 Church St., Middle Brighton, Victoria, 3186, Australia
Filed Jun. 3, 1980, Ser. No. 156,155
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—11



267,418
TOY PENDANT
Yoichi Abe, Tokyo, and Hajime Matsumoto, Chiba, both of Japan, assignors to Toybox Corporation, Tokyo, Japan
Filed Apr. 11, 1979, Ser. No. 29,036
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—62

267,419
EXERCISE STAND

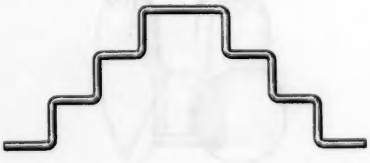
Gene Komarnicki, 2A Gertrude St., St. Albans, Victoria, 3021, Australia

Filed May 1, 1980, Ser. No. 145,835
Claims priority, application Australia, May 11, 1979, 79473
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—191

267,420
TRAINING BAR

Ronald S. Malachowsky, 323 W. 82nd St., New York, N.Y. 10024

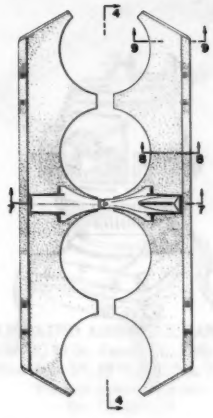
Filed Aug. 7, 1980, Ser. No. 176,127
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—195



267,421
AMMUNITION CLIP

Richard T. Tweedie, 10230 Imperial Ave., Cupertino, Calif. 94015

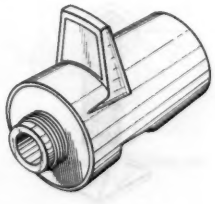
Filed Aug. 5, 1980, Ser. No. 175,571
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—7



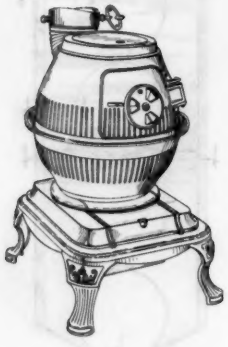
267,422
SHOWERHEAD STEAMER ATTACHMENT

Spencer L. Mackay, Canoga Park; Frederick G. Mackay, and Allan B. Johnson, both of Tarzana, all of Calif., assignors to Teledyne Industries, Inc.

Filed Oct. 6, 1980, Ser. No. 193,959
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—34

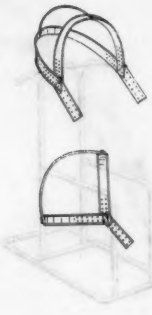


267,423
STOVE
Terence F. Porter, Auckland, New Zealand, assignor to Mason & Porter Limited, Auckland, New Zealand
Filed Feb. 7, 1979, Ser. No. 10,155
Claims priority, application New Zealand, Oct. 26, 1978, 15733
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—105



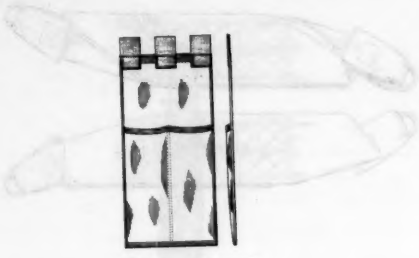
267,424
PORTABLE RADIANT ELECTRIC HEATER
Melvin H. Boldt, Glenview; Thurber H. Morrison, Evanston; Robert W. Becker, Naperville, and Robert S. Huff, Oak Park, all of Ill., assignors to National Presto Industries, Inc., Eau Claire, Wis.
Filed Jul. 18, 1980, Ser. No. 169,999
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—122

267,425
ORTHODONTIC HARNESS
Donald R. Therrien, Laconia, N.H., assignor to Masel Orthodontics, Inc., Philadelphia, Pa.
Filed Oct. 31, 1979, Ser. No. 89,971
Term of patent 14 years
Int. Cl. D24—*03, 99*
U.S. Cl. D24—16



267,426
ORTHODONTIC HARNESS
Donald R. Therrien, Laconia, N.H., assignor to Masel Orthodontics, Inc., Philadelphia, Pa.
Filed Oct. 31, 1979, Ser. No. 89,973
Term of patent 14 years
Int. Cl. D24—*03, 99*
U.S. Cl. D24—16

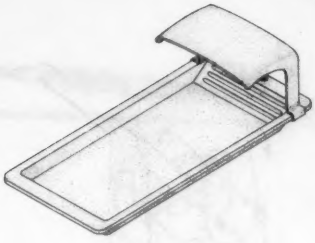
267,427
BODY THERMAL BANDAGE
Harvey E. Christensen, 508 6th St., NE., Conover, N.C. 28613; Charles H. Moretz, and John M. Moretz, both of P.O. Box 551, Newton, N.C. 28658
Filed Aug. 18, 1980, Ser. No. 178,756
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—34



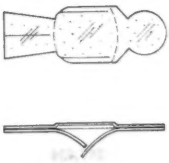
267,428
THERMAL BANDAGE
Harvey E. Christensen, 508 6th St., NE., Conover, N.C. 28613; Charles H. Moretz, and John M. Moretz, both of P.O. Box 551, Newton, N.C. 28658
Filed Aug. 18, 1980, Ser. No. 178,757
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—34

267,429
VENTED EAR TIP FOR HEARING AID
Mas Harada, Minneapolis, Minn., assignor to Qualitone Hearing Aids, Inc., Minneapolis, Minn.
Filed Apr. 28, 1980, Ser. No. 144,539
Term of patent 14 years
Int. Cl. D24—*99*
U.S. Cl. D24—35

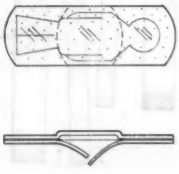
267,430
TANNING TUB
Anne W. Lee, 1439 Farmington Rd., Birmingham, Ala. 35235
Filed Sep. 8, 1980, Ser. No. 185,368
Term of patent 14 years
Int. Cl. D24—*99*
U.S. Cl. D24—38



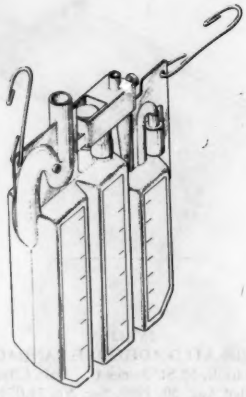
267,431
DECORATED ADHESIVE BANDAGE
Francis L. Santarelli, 58 St. James Ct., Daly City, Calif. 94015
Filed Aug. 30, 1979, Ser. No. 71,070
Term of patent 14 years
Int. Cl. 24—*04*
U.S. Cl. D24—49



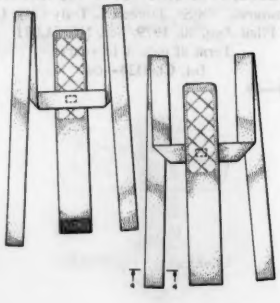
267,432
DECORATED ADHESIVE BANDAGE
Francis L. Santarelli, 58 St. James Ct., Daly City, Calif. 94015
Filed Aug. 30, 1979, Ser. No. 71,071
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D24—49



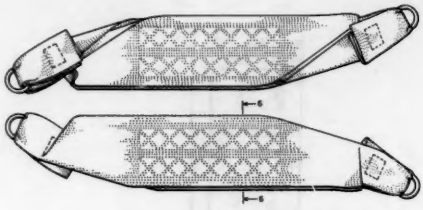
267,433
CHEST DRAINAGE BOTTLE
Gary M. Pageau, Arapahoe County, Colo., assignor to C. R. Bard, Inc., Murray Hill, N.J.
Filed Sep. 26, 1980, Ser. No. 190,937
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—59



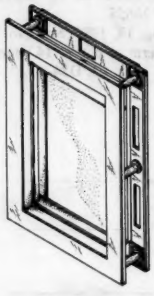
267,434
LIMB HOLDER
Vance M. Hubbard, Euless, and Welton K. Brunson, Bedford, both of Tex., assignors to Tecnol, Inc., Fort Worth, Tex.
Filed Sep. 5, 1980, Ser. No. 184,548
Term of patent 14 years
Int. Cl. D24—*05*
U.S. Cl. D24—64



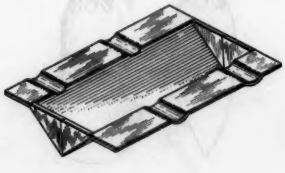
267,435
STIRRUP STRAP
Vance M. Hubbard, Euless, and Welton K. Brunson, Bedford, both of Tex., assignors to Tecnol, Inc., Fort Worth, Tex.
Filed Sep. 5, 1980, Ser. No. 184,624
Term of patent 14 years
Int. Cl. D24—*05*
U.S. Cl. D24—64



267,436
PET ACCESS DOOR
David Thorne, 6051 Corbin Ave., Tarzana, Calif. 91356
Filed Nov. 17, 1980, Ser. No. 207,277
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D25—48



267,437
DISPOSABLE ASHTRAY
Francis K. Harvey, 413 Trippe Ave., Easton, Md. 21601; Larrabee Franks, 515 Druid Hill Ave., Salisbury, Md. 21801, and David L. Ingraham, E. Walnut St., Delmar, Del. 19940
Filed Oct. 21, 1980, Ser. No. 199,370
Term of patent 14 years
Int. Cl. D27—*03*
U.S. Cl. D27—08



267,438

RAZOR

Chester F. Jacobson, Southboro, Mass., assignor to The Gillette Company, Boston, Mass.

Continuation-in-part of Ser. No. 22,052, Mar. 19, 1979, abandoned. This application Aug. 7, 1980, Ser. No. 176,259

Term of patent 14 years

Int. Cl. D28—*03*

U.S. Cl. D28—46

267,439

CERAMIC GREENWARE CLEANER

Thomas E. Gibson, 6709 Lyrewood Dr., Oklahoma City, Okla. 73132

Filed Aug. 20, 1980, Ser. No. 179,773

Term of patent 14 years

Int. Cl. D7—*05*

U.S. Cl. D32—52

LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 28TH DAY OF DECEMBER, 1982

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. E. Staley Manufacturing Company: *See*—
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A/S Finsam International, Inc.: *See*—
Samuelsen, Per, 4,365,485, Cl. 62-320.000.

Aaron Ferer & Sons Co., Inc.: *See*—
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AB Ferrosan: *See*—
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AB Medline: *See*—
Brundin, Jan-Olof, 4,365,621, Cl. 128-1.00R.

Abbott Laboratories: *See*—
Arbir, Francis W.; Raden, Daniel S.; and Narducy, Kenneth W., 4,366,084, Cl. 252-426.000.

Abe, Mitsuo; Kamiya, Akira; Itoh, Junya; Mawatari, Masaaki; and Kurihara, Fumio, to Japan Synthetic Rubber Co., Ltd. Molding resin composition. 4,366,281, Cl. 524-297.000.

Abendroth, Werner, to Carl Still GmbH & Co. K.G., Firma. Jamb brick support for coke oven doors. 4,366,028, Cl. 202-248.000.

Abraham, Fayez; and Bowman, Edward, to Tyler Refrigeration Corporation. Energy saving refrigeration system. 4,365,983, Cl. 62-81.000.

Abramo, Aina L.: *See*—
Bjork, Anders K. K.; Abramo, Aina L.; and Kjellberg, Bengt E. S., 4,366,162, Cl. 424-267.000.

Abrams, Bernice, administratrix: *See*—
Abrams, Carl C., deceased; Abrams, Bernice, administratrix; and Jones, James R., 4,366,096, Cl. 525-498.000.

Abrams, Carl C., deceased; Abrams, Bernice, administratrix; and Jones, James R. Cellulosic urea formaldehyde compositions. 4,366,096, Cl. 525-498.000.

Abrioux, Andre H.: *See*—
Leveque, Jean-Luc M.; and Abrioux, Andre H., 4,365,638, Cl. 128-774.000.

Abts, Leigh R., to Micro Pure Systems, Inc. Ultrasonic sensing. 4,365,515, Cl. 73-632.000.

Acco Industries, Inc.: *See*—
Morgan, Wendell D., 4,365,920, Cl. 414-224.000.

ACF Industries, Incorporated: *See*—
Treppler, Marc A., 4,365,832, Cl. 292-256.500.

Acheson Industries, Inc.: *See*—
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Adachi, Keiichi: *See*—
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Adachi, Kinichi: *See*—
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Adachi, Takeshi: *See*—
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Adam, Werner: *See*—
Broemer, Heinz; Adam, Werner; and Hedrich, Friedhelm, 4,365,356, Cl. 3-1.900.

Adams, Frederick J., to Cam Gears Limited. Power assisted vehicle steering system. 4,365,683, Cl. 180-132.000.

Adams, Joseph S. Compression wave former. 4,365,471, Cl. 60-39.760.

Adams, Kenneth D., to Singer Company, The. Feed regulator clamp. 4,365,569, Cl. 112-315.000.

Adams, Tello D.: *See*—
Clendening, Steven J.; and Adams, Tello D., 4,366,394, Cl. 307-225.00R.

Adell, Robert, to U.S. Product Development Co. Door edge guard. 4,365,450, Cl. 52-98.000.

Adelman, Roger A. Generalized signal processing hearing aid. 4,366,349, Cl. 179-107.0FD.

Adidas Fabrique de Chaussures de Sport: *See*—
Kreyenbuhl, Armand, 4,365,821, Cl. 280-615.000.

AEG-Telefunken Aktiengesellschaft: *See*—
Hasse, Peter; Wiesinger, Johannes; and Pivit, Erich, 4,366,523, Cl. 361-120.000.

Aerpat A.G.: *See*—
Francis, Albert C., 4,365,495, Cl. 72-88.000.

Affolder, Steven L.: *See*—
Zinck, Joseph W.; and Affolder, Steven L., 4,365,705, Cl. 198-424.000.

Agfa-Gevaert Aktiengesellschaft: *See*—
Fischer, Gunter; Stemme, Otto; and Wagensonner, Eduard, 4,366,381, Cl. 250-316.100.
Lassig, Wolfgang; Meier, Ernst; and Schleger, Siegfried, 4,366,240, Cl. 430-542.000.
Mayer, Karl H., deceased; Sasse, Klaus; and von Konig, Anita, 4,366,231, Cl. 430-375.000.
Ohlschlager, Hans; and Langen, Hans, 4,366,221, Cl. 430-507.000.

Aghnides, Elie P. Aerator with reduced noise. 4,365,755, Cl. 239-428.500.

Agrober Mezogazdasagi es Elelmiszeripari Tervezo, Beruhazasi Vallalat: *See*—
Alajos, Dobos; Kiss, Gyula; Gaspar, Bela; Imre, Geza; Jony nee Acs, Julia; Forian, Istvan; Ijjas, Istvan; Liptak, Ferenc; and Bisits nee Zsilinszky, Vilma, 4,365,757, Cl. 239-567.000.

Agulnek, Martin A.: *See*—
Crean, Peter A.; and Agulnek, Martin A., 4,366,508, Cl. 358-287.000.

Aharoni, Shaul M., to Allied Corporation. Polyester composition with mixed metal ion nucleating agents. 4,366,273, Cl. 523-400.000.

AHI Operations Limited: *See*—
Phillips, Evan M.; and Millar, Thomas D., 4,365,589, Cl. 119-14.020.

Ahne, Hellmut; Kuhn, Eberhard; and Rubner, Roland, to Siemens Aktiengesellschaft. Method for the preparation of highly heat-resistant relief structures and the use thereof. 4,366,230, Cl. 430-325.000.

Aisin Seiki Company, Limited: *See*—
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Aisin Seiki Kabushiki Kaisha: *See*—
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Aizawa, Hiroshi: *See*—
Tsunekawa, Tokuichi; Date, Nobuaki; Aizawa, Hiroshi; Hosoe, Kazuya; and Urushibara, Kazunori, 4,366,501, Cl. 358-310.000.

Akai, Yoshimi; Hirose, Masahiko; and Sanpei, Hideo, to Tokyo Shibaura Denki Kabushiki Kaisha. Process for forming photoconductive organic film. 4,366,208, Cl. 428-421.000.

Akai, Yoshimi: *See*—
Hirose, Masahiko; and Akai, Yoshimi, 4,365,587, Cl. 118-723.000.

Aktiengesellschaft Adolph Saurer: *See*—
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Alajos, Dobos; Kiss, Gyula; Gaspar, Bela; Imre, Geza; Jony nee Acs, Julia; Forian, Istvan; Ijjas, Istvan; Liptak, Ferenc; and Bisits nee Zsilinszky, Vilma, to Agrober Mezogazdasagi es Elelmiszeripari Tervezo, Beruhazasi Vallalat. Water feeding head. 4,365,757, Cl. 239-567.000.

Alberts, Heinrich: *See*—
Friemann, Hans; Moretto, Hans-Heinrich; Alberts, Heinrich; de Montigny, Armand; and Toepsch, Hans, 4,366,286, Cl. 524-588.000.

Albright, David B.; Schubert, Keith E.; and Pollak, Philip, Jr., to Pitney Bowes Inc. Apparatus for interconnecting an actuator and a postage meter. 4,366,376, Cl. 235-101.000.

Alekhin, Stanislav A.: *See*—
Bakhir, Vitold M.; Alekhin, Stanislav A.; Bakhir, Tatiana M.; Born, Raisa I.; and Alimdzhanov, Khamidulla A., 4,365,507, Cl. 73-153.000.

Alessandrini, Paolo; De Angelis, Lucio; Galiazzi, Fabrizio; Losciale, Francesco; and Scafe', Ernesto, to E.N.I. Ente Nazionale Idrocarburi. p-Si/n-CdS Heterojunction photovoltaic cells. 4,366,337, Cl. 136-258.000.

Alfa & Associates, Inc.: *See*—
Ekuan, Kenji, 4,365,713, Cl. 206-387.000.

Alimdzhanov, Khamidulla A.: *See*—
Bakhir, Vitold M.; Alekhin, Stanislav A.; Bakhir, Tatiana M.; Born, Raisa I.; and Alimdzhanov, Khamidulla A., 4,365,507, Cl. 73-153.000.

Allen, Brian R., to Lucas Industries Limited. Method of producing an electrical component. 4,366,361, Cl. 219-78.010.

Allen, Rod H.: *See*—
Main, David T.; Riddle, John B.; and Allen, Rod H., 4,366,481, Cl. 340-825.540.

Allen, Wayne: *See*—
Ruggieri, Albert P.; Marinaccio, Frank J.; Campbell, Neil E.; Allen, Wayne; Moum, Stanley; Malatesta, Paul F.; Pietrowski, Joseph J.; and Schwartz, Leonard H., 4,365,590, Cl. 119-15.000.

Allied Corporation: *See*—
Aharoni, Shaul M., 4,366,273, Cl. 523-400.000.
Ray, Ranjan, 4,365,994, Cl. 75-123.00B.

Alpkvist, Jan. Device for combustion of a volatile fuel with air. 4,365,951, Cl. 431-82.000.

Alston, Julia M., to Moore Business Forms, Inc. Method of employing encapsulated material. 4,366,188, Cl. 427-150.000.

Altrock, Werner W. L.; and Ritums, Janis A., to Lever Brothers Company. Process for producing a low-fat oil-in-water-in-oil emulsion. 4,366,180, Cl. 426-602.000.

Amax Inc.: *See—*
Olin, Eric J.; Carson, Harry B.; and Ball, Brian, 4,366,050, Cl. 209-167.000.

Amchem Products, Inc.: *See—*
Carandang, Carmen M., 4,366,002, Cl. 134-2.000.
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Amemiya, Akira; Kunii, Tadashi; Furusawa, Tomotaka; Takeda, Mutsuhiko; Tanaka, Katsumasa; Umemura, Toshikazu; Ono, Yoshihiro; Masumoto, Isamu; Nakao, Noriyasu; and Furukawa, Masanori, to Mitsubishi Gas Chemical Company, Inc. Process for heat stabilizing oxymethylene copolymers. 4,366,305, Cl. 528-230.000.

American Casting and Manufacturing Company: *See—*
Burnett, Ralph G., 4,365,833, Cl. 292-318.000.

American Cyanamid Company: *See—*
Rauhut, Michael M.; and Mohan, Arthur G., 4,366,079, Cl. 252-188.3CL.

American Fletcher National Bank and Trust Company, Administrator: *See—*
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American Hoechst Corporation: *See—*
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American Home Products Corporation: *See—*
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Amorese, Franklyn J.; and Piarulli, Vincent J. Separable blade agitator with clip-on impellers. 4,365,897, Cl. 366-343.000.

Anders, Dietmar, to Hermann Berstorff Maschinenbau GmbH. Apparatus for continuously processing rubber, elastomers, plastics and like materials which can be vulcanized or cross-linked. 4,365,946, Cl. 425-144.000.

Anderson, David: *See—*
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Anderson, George W.: *See—*
Reid, Cedric N.; and Anderson, George W., 4,365,806, Cl. 273-73.00C.

Anderson, Gordon K.: *See—*
Carson, Ernest A.; and Anderson, Gordon K., 4,365,484, Cl. 62-239.000.

Anderson, Max F. Subatmospheric pressure distillation and/or cooling method and means. 4,366,030, Cl. 203-11.000.

Anderson, Max F. Alcohol-water mixture distillation. 4,366,031, Cl. 203-18.000.

Anderson, Richard B.; and Kalenda, Norman W., to Eastman Kodak Company. Photographic products and processes employing novel nondiffusible bridged azdaminophenol magenta dye-releasing compounds and precursors thereof. 4,366,218, Cl. 430-17.000.

Ando, Masao, to Chisso Corporation. Compact induced current heat-generating pipe. 4,366,356, Cl. 219-10.510.

Andoh, Masamoto, to Aisin Seiki Kabushiki Kaisha. Vacuum operatable differential servo-motor. 4,365,538, Cl. 91-1.000.

Andres, Helmut; Fichtner, Karl-Heinz; and Fisher, Hans-Siegfried, to Anschutz & Co., GmbH. Lubricant recirculation system for the bearing of a rotating shaft. 4,365,851, Cl. 308-187.000.

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Anglia Autoflow Limited: *See—*
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Annis, Martin, to American Science and Engineering, Inc. Penetrating radiant energy imaging system with multiple resolution. 4,366,576, Cl. 378-146.000.

Anschutz & Co., GmbH: *See—*
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Anselrode, Lodewijk, to Stork Brabant B.V. Controlling the operation of a printing equipment. 4,366,542, Cl. 364-469.000.

Anthony, Blair T., to General Electric Company. Polycarbonate resins stabilized with nitriles containing a 2-OH benzophenone group. 4,366,207, Cl. 428-412.000.

Antos, George J., to UOP Inc. Hydrocarbon dehydrogenation with an attenuated superactive multimetallic catalytic composite for use therein. 4,366,091, Cl. 252-466.0PT.

Antunez, Bruce A. Flush valve and means for mounting the same. 4,365,365, Cl. 4-393.000.

Anvar: *See—*
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Aoki, Kiyoshi; and Ichinose, Kazuaki, to Tokyo Shibaura Denki Kabushiki Kaisha. I^2L Memory device. 4,366,554, Cl. 365-155.000.

Aono, Masami, to Tokico Ltd. Hydraulic brake pressure control valve. 4,365,845, Cl. 303-6.00C.

Aoyagi, Edward J., to Chevron Research Company. 2-Thiocyanomethylthio-4,4-dialkyl-5-substituted-thiazoline fungicides. 4,365,989, Cl. 71-67.000.

Applied Cardiac Electrophysiology: *See—*
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Arai, Akira: *See—*
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Arai, Toshio; Kanehira, Hidehiko; and Ikemoto, Kazuo, to Kobe Steel, Ltd. Flux-cored wire for use in gas-shielded arc welding. 4,366,364, Cl. 219-146.240.

Arai, Yasuyuki: *See—*
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Armco Inc.: *See—*
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Armosig S.A.: *See—*
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Armstrong, Currie; and Christophersen, Clarence E. Newspaper vending machine. 4,365,701, Cl. 194-22.000.

Arnaud, Alain: *See—*
Jallageas, Jean C.; Arnaud, Alain; and Galzy, Pierre, 4,366,250, Cl. 435-280.000.

Arnaudeau, Marcel, to Institut Francais du Petrole. Pumping device for diphasic fluids. 4,365,932, Cl. 415-199.500.

Arnold, William: *See—*
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Arter, Thomas C.; and Barbee, Eugene H., to Eastman Kodak Company. Method and apparatus for drying coated sheet material. 4,365,423, Cl. 34-23.000.

Asahi-Dow Limited: *See—*
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Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
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Asami, Fumitaka, to Fujitsu Limited. Amplifier circuit. 4,366,398, Cl. 307-451.000.

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Asari, Akira, to Kobe Steel, Ltd. Intermediate frame type indirect extrusion press. 4,365,497, Cl. 72-255.000.

Ashland Oil, Inc.: *See—*
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Linden, Gary L.; and Kathiriya, Shiraz A., 4,366,193, Cl. 427-340.000.

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Associated Equipment Corporation: *See—*
Wright, Bruce R., 4,366,430, Cl. 320-25.000.

Ast, Gerhard; Dietl, Josef; Helmreich, Dieter; Miller, Hans-Dieter; and Sirtl, Erhard, to Heliotronic Forschungs-und Entwicklungsgesellschaft fur Solarzellen-Grundstoffe mbH. Process for making solar cell base material. 4,366,024, Cl. 156-607.000.

Astle, William H. Portable lathe. 4,365,528, Cl. 82-4.00C.

Atwell, Graham J.: *See—*
Cain, Bruce F., deceased; and Atwell, Graham J., 4,366,318, Cl. 546-106.000.

Auerbach, Robert A.; and Boenig, Herman V., to Lord Corporation. Method for bonding silicone elastomers to metal substrates. 4,366,184, Cl. 427-41.000.

Autoipari Kutato Intezet: *See—*
Ratsko, Istvan; Ivony, Jozsef; Madi, Jeno; and Karaszi, Gyorgy, 4,365,685, Cl. 180-135.000.

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Axen, Udo F., to Upjohn Company, The. 2-Decarboxy-2-tetrazolyl-6-keto-PGE$_1$compounds. 4,366,313, Cl. 542-426.000.
Azuma, Kenkoku: *See—*
Takeyama, Tetsu; Azuma, Kenkoku; Ikeda, Akira; Yamamoto, Toshie; and Katsurada, Shigeho, 4,365,979, Cl. 55-181.000.
B.A.T. Cigaretten-Fabriken GmbH: *See—*
Lorenz, Hans-Walther; and Schumacher, Gerd, 4,365,640, Cl. 131-330.000.
B. F. Goodrich Company, The: *See—*
Jones, Robert F., 4,366,019, Cl. 156-360.000.
Baba, Masaharu; Honda, Kiyokazu; and Hashima, Akiyoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Method for manufacturing a baseless incandescent lamp assembly. 4,365,396, Cl. 29-25.130.
Babcock, Warner K., to Construction Products Research, Inc. Surface treating method and composition for cement. 4,366,209, Cl. 428-446.000.
Bahder, George; Katz, Carlos; Dima, Attila F.; and Knott, Adolf S., to GK Technologies, Incorporated, General Cable Company Division. Apparatus for molding stress control cones insitu on the terminations of insulated high voltage power cables. 4,365,947, Cl. 425-384.000.
Bai, Roland D.; Brodovsky, Vladimir N.; Ivanov, Evgeny S.; Kanep, Alexandr A.; Feldman, Alexandr V.; and Chabanov, Alim I. Asynchronous motor drive. 4,366,428, Cl. 318-809.000.
Bailey, Henry J.: *See—*
Van Blokland, Gerardus J.; and Bailey, Henry J., 4,365,793, Cl. 271-3.100.
Bailey, Ronald L., to Young Dental Manufacturing Company. Cleaning cup. 4,365,956, Cl. 433-115.000.
Baily, Oliver L., to Cincinnati Milacron Inc. Fluid power connector system for manipulator. 4,365,928, Cl. 414-735.000.
Baker International Corporation: *See—*
McCombs, Russell L.; and Motsinger, James V., 4,365,402, Cl. 29-407.000.
Baker, Maurice R. Lining system for chimneys and ducts. 4,365,543, Cl. 98-58.000.
Baker, Richard H., to Reliance Electric Company. Self-snubbing bipolar/field effect (biofet) switching circuits and method. 4,366,522, Cl. 361-91.000.
Bakhir, Tatiana M.: *See—*
Bakhir, Vitold M.; Alekhin, Stanislav A.; Bakhir, Tatiana M.; Born, Raisa I.; and Alimdzhanov, Khamidulla A., 4,365,507, Cl. 73-153.000.
Bakhir, Vitold M.; Alekhin, Stanislav A.; Bakhir, Tatiana M.; Born, Raisa I.; and Alimdzhanov, Khamidulla A. Method of determining the depth of occurrence of a chemically aggressive bed. 4,365,507, Cl. 73-153.000.
Balke, Roy L.: *See—*
Zdaniewski, Joseph J.; Penn, William B.; and Balke, Roy L., 4,365,407, Cl. 29-598.000.
Ball, Brian: *See—*
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Ball Corporation: *See—*
Weiss, Michael A.; and Munson, Robert E., 4,366,484, Cl. 343-700.0MS.
Baltz, Richard H.; and Seno, Eugene T., to Eli Lilly and Company. Process for preparing tylactone. 4,366,247, Cl. 435-124.000.
Bandag Incorporated: *See—*
Ho, Morris D., 4,365,514, Cl. 73-592.000.
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Klaus, Gerald R.; Williams, Thomas E.; and Nizzere, Paul D., 4,365,431, Cl. 40-352.000.
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Barchetti, Giuseppe: *See—*
Grilli, Walter; Crotti, Aldo; and Barchetti, Giuseppe, 4,365,848, Cl. 305-54.000.
Bare, Rex O.; and Robinson, Earl F., to C. R. Bard, Inc. Medical electrode construction. 4,365,634, Cl. 128-640.000.
Bargiotti, Alberto; Cassinelli, Giuseppe; Penco, Sergio; Arcamone, Federico; and Casazza, Annamaria. Antitumor anthracycline glycosides, their preparation, intermediates therefor, and compositions and use thereof. 4,366,149, Cl. 424-180.000.
Barker, Kent R., to Medicon, Inc. Method of monitoring patient respiration and predicting apnea therefrom. 4,365,636, Cl. 128-716.000.
Barker, Stephen F., to Cooper Industries, Inc. Keyboard. 4,366,463, Cl. 338-69.000.
Barnes, George A.; and Sirois, Walter J., to Victory Games, Inc. Game table. 4,365,803, Cl. 273-5.00R.
Barnes Group Inc.: *See—*
Zavatkay, Robert J.; Kurasz, George W.; and Devaux, Robert R., 4,365,690, Cl. 185-45.000.
Baron, Kenneth; and McArthur, Dennis P., to Union Oil Company of California. Process for reducing CO and SO_x emissions from catalytic cracking units. 4,366,083, Cl. 252-416.000.
Barry, Dixie B. Three-figure dissection puzzle. 4,365,809, Cl. 273-157.00R.
Bart, Philip D. Merry-go-round stroller. 4,365,819, Cl. 280-47.410.
Barten, Piet G. J., to U.S. Philips Corporation. Astigmatic electron lens for a cathode-ray tube. 4,366,419, Cl. 315-382.000.
Bartlett, John M., to Elan Pressure Clean Limited. Cleaning apparatus for components. 4,365,383, Cl. 15-302.000.
Bartlett, Norman L. Apparatus for making a copy in one of three sizes of X-ray film. 4,365,892, Cl. 355-63.000.
Base, Horst: *See—*
Tolasch, Gerhard; Base, Horst; and Bantien, Jurgen, 4,365,702, Cl. 198-347.000.
BASF Aktiengesellschaft: *See—*
Hagen, Karl; Scholl, Karl H.; and Schmelzer, Gerhard, 4,366,369, Cl. 219-388.000.
Oppenlaender, Knut; Krapf, Heinz; and Lang, Siegfried, 4,366,151, Cl. 424-238.000.
Vodrazka, Wolfgang; Klahr, Erhard; Oppenlaender, Knut; Trieselt, Wolfgang; Stoeckigt, Dieter; and Neumann, Werner, 4,366,326, Cl. 568-613.000.
Basiulis, Algerd, to Hughes Aircraft Company. Osmotically pumped heat pipe with passive mixing. 4,365,664, Cl. 165-40.000.
Bates, Bobbie D.; and Haus, Ralph A., to International Business Machines Corp. Tilt and rotate apparatus for a display monitor. 4,365,779, Cl. 248-371.000.
Bauer, James J., to Clark Equipment Company. Controller for electric traction motor. 4,365,687, Cl. 180-315.000.
Baumgartner, Carl, to Elcar Zurich AG. Air ionizer for rooms. 4,366,525, Cl. 361-231.000.
Bawks, James R.: *See—*
Dissett, Walter L.; and Bawks, James R., 4,365,524, Cl. 74-715.000.
Bax, Ronald F., to Pfizer Inc. Method and apparatus for controlling x-ray tube emissions. 4,366,575, Cl. 378-110.000.
Bayer Aktiengesellschaft: *See—*
Beecken, Hermann, 4,366,314, Cl. 542-455.000.
Freitag, Dieter; Nouvertne, Werner; Reinking, Klaus; Tacke, Peter; Kleiner, Frank; and Schmidt, Manfred, 4,366,276, Cl. 524-94.000.
Friemann, Hans; Moretto, Hans-Heinrich; Alberts, Heinrich; de Montigny, Armand; and Toepsch, Hans, 4,366,286, Cl. 524-588.000.
Kramer, Wolfgang; Timmler, Helmut; Buchel, Karl H.; Brandes, Wilhelm; Frohberger, Paul-Ernst; and Scheinpflug, Hans, 4,366,152, Cl. 424-245.000.
Rauchschwalbe, Gunter; Blank, Heinz U.; Mannes, Karl; and Mayer, Dietmar, 4,366,102, Cl. 260-463.000.
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Bazin, Lucas J.: *See—*
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BBC Brown, Boveri & Company Limited: *See—*
Jaecklin, Andre, 4,366,496, Cl. 357-38.000.
Melton, Keith; Mercier, Olivier; and Riegger, Helmut, 4,365,996, Cl. 419-28.000.
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BCH Chemicals Limited: *See—*
Gray, George W.; Lacey, David; Jenner, John A.; and Pellatt, Martin G., 4,366,330, Cl. 568-775.000.
Beach, David L.; and Zambelli, Adolfo, to Gulf Research & Development Company. Composition containing chlorine, bromine and magnesium. 4,366,086, Cl. 252-431.00R.
Beach, Shirley, to Phillips Cables Limited. Composition for filling cables. 4,366,075, Cl. 252-28.000.
Beale, Alvin F., Jr., to Dow Chemical Company, The. Chromium oxide in ion exchange resin. 4,366,261, Cl. 521-25.000.
Bechtel International Corporation: *See—*
Rogers, Alfred N.; Awerbuch, Leon; and May, Sherman C., 4,366,066, Cl. 210-696.000.
Beck, Louis. Diaphragm pump. 4,365,745, Cl. 239-124.000.
Beck, Martin H.: *See—*
Harry, Ieuan L.; Krihsnakumar, Suppayan M.; Joliy, Walter R.; and Beck, Martin H., 4,365,950, Cl. 425-534.000.
Beecham Group Limited: *See—*
Corbett, David F., 4,366,167, Cl. 424-274.000.
Evans, John M.; Showell, Graham A.; and Fake, Charles S., 4,366,163, Cl. 424-267.000.
Beecken, Hermann, to Bayer Aktiengesellschaft. Dimethine dyestuffs, their preparation and their use for dyeing synthetic and natural materials. 4,366,314, Cl. 542-455.000.
Beery, Jack, to Xerox Corporation. Scanning optics copier with variable pitch copy capability. 4,366,219, Cl. 430-31.000.
Bees, George L., to Candela Corporation. Series inverter for capacitor charging. 4,366,570, Cl. 372-70.000.
Bell & Howell Company: *See—*
Bowman, Ronald, 4,365,635, Cl. 128-675.000.
Bell, Melvyn R., to Ferranti Limited. Circuit assemblies each with a connector having an insulating block with two separable stacked parts. 4,366,527, Cl. 361-386.000.
Bell Telephone Laboratories, Incorporated: *See—*
Keramidas, Vassilis G.; McCoy, Robert J.; and Temkin, Henryk, 4,366,186, Cl. 427-89.000.
Kirsch, Howard C., 4,366,400, Cl. 307-594.000.
Beloit Corporation: *See—*
Fitzpatrick, Donald C.; Gerard, Peter A.; and Davison, John F., 4,365,797, Cl. 271-303.000.

Gordon, Ambrose L., Jr.; and Busker, Leroy H., 4,366,025, Cl. 162-358.000.

Bender, Reinhold H. W., to American Home Products Corporation. Process for preparing aminopenicillins. 4,366,098, Cl. 260-239.100.

Bendix Corporation, The: *See—*
Karol, James J., 4,365,858, Cl. 339-36.000.
Marsh, Edward K., 4,365,412, Cl. 29-863.000.

Beneke, Wolfgang; and Leifeld, Ferdinand, to Trutzschler GmbH & Co. KG. Apparatus for cleaning textile fiber tufts. 4,365,389, Cl. 19-200.000.

Bennett, David E., to Kelley Company Inc. Hydraulically operated dockboard. 4,365,374, Cl. 14-71.700.

Bennett, M. C., Sr. Engine starting device. 4,365,596, Cl. 123-179.0SE.

Bennett, Richard C.: *See—*
Korfmann, Robert G.; and Bennett, Richard C., 4,365,382, Cl. 15-249.000.

Benson, Henry E.: *See—*
Wagner, Walter R.; and Benson, Henry E., 4,365,669, Cl. 166-231.000.

Benthimere, Floyd D. Apparatus for laminating and coiling insulation blankets. 4,365,767, Cl. 242-67.10R.

Benyak, Istvan; Dudas, Lajos; and Pohl, Oszkar, to Hutotechnika Ipari Szovetkezet; and Villamosenergiaipari Kutato Intezet. Heat exchanger. 4,366,106, Cl. 261-156.000.

BERFI S.p.A.: *See—*
Galluzzi, Giovanni; and Fiocchi, Giulio, 4,365,555, Cl. 102-204.000.

Berg, Alan D., to General Motors Corporation. Inertia seat back lock. 4,365,838, Cl. 297-379.000.

Berger, Jean L., to Thomson-CSF. Switched-capacity amplifier, switched-capacity filter and charge-transfer filter comprising such an amplifier. 4,366,455, Cl. 332 165.000.

Berger, Michael; and Magenheimer, John J., to Polaroid Corporation. Diffusion transfer film unit. 4,366,227, Cl. 430-215.000.

Berglund, Neil C.; and Burchfiel, John R., Jr., to International Business Machines Corporation. Cycle control for a microprocessor with multi-speed control stores. 4,366,540, Cl. 364-200.000.

Berndt, Wilhelm: *See—*
Kuhner, Gerhard; Berndt, Wilhelm; Rothbuhr, Lothar; and Wagner, Hans, 4,366,139, Cl. 423-449.000.

Berry, George A., to International Computers Limited. Fastening devices. 4,365,907, Cl. 403-12.000.

Bertelsen, Corey A.; and Handel, Gene M., to Chevron Research Company. Size separation of oil shale particles for efficient retorting. 4,366,046, Cl. 208-11.00R.

Bertin & Cie: *See—*
Raymond, Bernard P. M., 4,366,322, Cl. 549-489.000.

Bethlehem Steel Corporation: *See—*
Gee, Kenneth H., 4,365,984, Cl. 65-2.000.
Mihalow, Frederick A., 4,365,896, Cl. 356-446.000.

Bettencourt, Thomas S.; and Freeman, Daniel L., to University of California, The Regents of The. Harvesting tomatoes. 4,365,463, Cl. 56-327.00R.

Bevilaqua, Ernest M.; McCroskery, Allan L.; and Knerr, Theodore N., to Otis Elevator Company. Integrated elevator cab fixture. 4,365,691, Cl. 187-1.00R.

Biedermann, Horst H.; Hermann, Ferdinand; Pechinger, Ernst; and Sereinigg, Emil L. F., to NCR Corporation. Wire matrix print head. 4,365,902, Cl. 400-124.000.

Bigall, Klaus D.: *See—*
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Binger, Larry W. Vertical convection heat dissipation tower. 4,365,483, Cl. 62-183.000.

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Bird, George; and Custer, Peter A. Motion picture film having digitally coded soundtrack and method for production thereof. 4,366,217, Cl. 430-11.000.

Bisits nee Zsilinszky, Vilma: *See—*
Alajos, Dobos; Kiss, Gyula; Gaspar, Bela; Imre, Geza; Jony nee Acs, Julia; Forian, Istvan; Ijjas, Istvan; Liptak, Ferenc; and Bisits nee Zsilinszky, Vilma, 4,365,757, Cl. 239-567.000.

Bittar, Joseph, to Otis Elevator Company. Preventing elevator car calls behind car. 4,365,694, Cl. 187-29.00R.

Bivar, Inc.: *See—*
Muldoon, Edward M., Jr., 4,365,411, Cl. 29-845.000.

Bixby, Robert P.; and Ziegler, Eugene, to Koppers Company, Inc. Pivoting back one-spot coke car. 4,366,029, Cl. 202-262.000.

Bjork, Anders K. K.; Abramo, Aina L.; and Kjellberg, Bengt E. S., to AB Ferrosan. Aryl ethers of N-alkyl-piperidines and acid addition salts thereof. 4,366,162, Cl. 424-267.000.

Black & Decker Inc.: *See—*
Overbury, Douglas G., 4,365,416, Cl. 30-382.000.
Simpson, Frank F.; Johnson, John W.; and Oatham, Robert J., 4,366,403, Cl. 310-239.000.

Blanchard, Eugene J.: *See—*
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Blank, Heinz U.: *See—*
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Bliamptis, Emmanuel E. Reversible window for solar heating and cooling. 4,365,620, Cl. 126-429.000.

Block, Franz-Rudolf, to Didier-Werke AG. Process and apparatus for determining the level of molten metal in a metallurgical vessel, the temperature of the molten metal and the extent of wear of the refractory lining of the vessel. 4,365,788, Cl. 266-44.000.

Block, Harry; and Wiesenbacher, Rudolf, to Siemens Aktiengesellschaft. Cooling capsule for disc-shaped semiconductor components. 4,366,497, Cl. 357-82.000.

Block, Jacob, to W. R. Grace & Co. Viscosifier & fluid loss control system. 4,366,070, Cl. 252-8.50A.

Blose, William G. Speaker cabinet. 4,365,688, Cl. 181-145.000.

Blount, Luther H. Hull construction. 4,365,580. Cl. 114-356.000.

Boaggio, Richard J.: *See—*
Golding, Gordon R.; and Boaggio, Richard J., 4,366,067, Cl. 210-671.000.

Bode, Udo; Thiele, Paul; Mohring, Gunter; and Hildebrand, Helmut, to Kabel- u. Metallwerke Gutehoffnungshutte AG. Radiating coaxial cable having apertures spaced at a distance considerably larger than a wavelength. 4,366,457, Cl. 333-237.000.

Boden, Richard M.; Dekker, Lambert; Schmitt, Frederick L.; and Van Loveren, Augustinus G., to International Flavors & Fragrances Inc. Process for augmenting or enhancing the aroma of detergents using dimerized isoamylene composition. 4,366,078, Cl. 252-174.110.

Boehringer Mannheim GmbH: *See—*
Thum, Waldemar; Lang, Gunter; Vetter, Hellmuth; and Naher, Gotthilf, 4,366,249, Cl. 435-188.000.

Boeing Company, The: *See—*
Glancy, Jerry L., 4,365,775, Cl. 244-53.00R.

Boenig, Herman V.: *See—*
Auerbach, Robert A.; and Boenig, Herman V., 4,366,184, Cl. 427-41.000.

Boettner, George B., to Corning Glass Works. Apparatus and method of conditioning and conveying thermoplastic material. 4,365,987, Cl. 65-137.000.

Boggs, William H. Bathing facility. 4,365,368, Cl. 4-596.000.

Boing, Wulf: *See—*
Witte, Willi; and Boing, Wulf, 4,365,373, Cl. 8-150.000.

Bokelmann, Rainer: *See—*
Kuhnel, Roland; Bokelmann, Rainer; Scholz, Magnus; Gebke, Klaus; and Schuler, Mariana, 4,366,114, Cl. 376-272.000.

Bolin, Philip C.: *See—*
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Bolton - Emerson, Inc.: *See—*
Danforth, Donald W., 4,365,761, Cl. 241-21.000.

Bonvoisin, Jacques, to Compagnie International des Pieux Armes Frankignoul. Method and device for building in the ground vertical walled structures starting from a subterranean conduit. 4,365,913, Cl. 405-132.000.

Bopp, Warren G., to Eaton Corporation. Fan drive actuator. 4,365,592, Cl. 123-41.120.

Borders, Ernest D., to Rubbermaid Applied Products Inc. Side-loading dump unit. 4,365,922, Cl. 414-406.000.

Borghans, Joseph H., to U.S. Philips Corporation. Magnetic erasing head. 4,366,517, Cl. 360-118.000.

Born, Raisa I.: *See—*
Bakhir, Vitold M.; Alekhin, Stanislav A.; Bakhir, Tatiana M.; Born, Raisa I.; and Alimdzhanov, Khamidulla A., 4,365,507, Cl. 73-153.000.

Borovsky, Joseph, to Kimberly-Clark Corporation. Ceramic/organic web. 4,366,202, Cl. 428-283.000.

Bostelmann, Jurgen, to Claudius Peters AG. Cooler for combustible material. 4,365,953, Cl. 432-78.000.

Bourne, William R., to Hartwell Corporation. Channel latch. 4,365,831, Cl. 292-229.000.

Boussaroque, Bertrand J. Mattresses with stiffeners. 4,365,371, Cl. 5-462.000.

Bowden, Wade R., Jr.: *See—*
Slater, Thomas S.; and Bowden, Wade R., Jr., 4,366,343, Cl. 174-65.00R.

Bowden, William L.: *See—*
Dey, Arabinda N.; Bowden, William L.; and Bro, Per, 4,366,212, Cl. 429-101.000.

Bowen, Franklin D. Center-pivot irrigator. 4,365,749, Cl. 239-177.000.

Bowles Fluidics Corporation: *See—*
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Bowman, Edward: *See—*
Abraham, Fayez; and Bowman, Edward, 4,365,983, Cl. 62-81.000.

Bowman, Ronald, to Bell & Howell Company. Pressure transducing methods and apparatus. 4,365,635, Cl. 128-675.000.

Boyadjieff, George I.; and Campbell, Andrew B., to Varco International, Inc. Method and apparatus for drilling laterally from a well bore. 4,365,676, Cl. 175-61.000.

Boyd, Jerry R., to Washington Instrument, Inc. Bobbin locking device. 4,365,766, Cl. 242-46.200.

Boyer, David C.; and Ruehl, William E., to Illinois Tool Works Inc. Differential pressure signal device. 4,365,582, Cl. 116-70.000.

Br. Perssons Cementvarufabrik AB: *See—*
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Bradshaw, Cyril E.; and Uitvlugt, Martin W., to Eaton Corporation. Controlling engine exhaust gas recirculation and vacuum inverter. 4,365,608, Cl. 123-568.000.

Bradshaw, John: *See—*
Clitherow, John W.; Price, Barry; Bradshaw, John; and Martin-Smith, Michael, 4,366,164, Cl. 424-267.000.

Braine, William G. Method of building construction. 4,365,455, Cl. 52-741.000.

Brandes, Wilhelm: *See—*
Kramer, Wolfgang; Timmler, Helmut; Buchel, Karl H.; Brandes, Wilhelm; Frohberger, Paul-Ernst; and Scheinpflug, Hans, 4,366,152, Cl. 424-245.000.

Brandt, Inc.: *See—*
Loftus, Peter J., 4,365,508, Cl. 73-159.000.

Brandt, Richard T., to General Electric Company. Computed tomography system cable retractor. 4,366,577, Cl. 378-194.000.

Brantley, Zachry G., to Hoechst Fibers Industries, Division of American Hoechst Corporation. Apparatus for handling textile filamentary material. 4,365,395, Cl. 28-281.000.

Braslau, Norman; Freeouf, John L.; Pettit, George D.; Rupprecht, Hans S.; and Woodall, Jerry M., to International Business Machines Corporation. Semiconductor ballistic transport device. 4,366,493, Cl. 357-4.000.

Breeden, Robert H.: *See—*
Taylor, Henry D.; and Breeden, Robert H., 4,365,647, Cl. 137-489.000.

Breedlove, James G., to Minnesota Mining and Manufacturing Company. Conductively coated embossed articles. 4,366,342, Cl. 174-52.0FP.

Brettschneider, Johannes: *See—*
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Bridges, Thomas K.; and Nourse, Howard, to Kirk Bridges, Inc. Oil filter seal membrane. 4,366,057, Cl. 210-437.000.

Briggs, Peter J., to Imperial Chemical Industries Limited. Foamed plastics laminates. 4,366,203, Cl. 428-304.400.

Briggs, Peter J., to Imperial Chemical Industries Limited. Foamed plastics laminates. 4,366,204, Cl. 428-304.400.

Brigham and Women's Hospi. il: *See—*
Szabo, Sandor; and Usadel, Klaus H., 4,366,148, Cl. 424-177.000.

Bright, Donald F., to Champion Conveyor Components Limited. Device for cleaning conveyor belts. 4,365,706, Cl. 198-499.000.

Bright, Gary R., to Standard Oil Company (Indiana). Side wall clamp for downhole tools. 4,365,668, Cl. 166-214.000.

Brightwell, Alan, to British Gas Corporation. Fuel burner control system circuits. 4,366,391, Cl. 307-129.000.

Brigman, Maurice C.; and Sikes, Edward C., to Brigman, Maurice C. Disabled person transfer device. 4,365,924, Cl. 414-549.000.

Brisken, Axel F.: *See—*
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British-American Tobacco Company Limited: *See—*
Naylor, Donald B.; and Krywiczanin, Wladyslaw H., 4,365,585, Cl. 118-302.000.

British Gas Corporation: *See—*
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British Nuclear Fuels Limited: *See—*
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Bro, Per: *See—*
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Broderick, Michael, to Odenberg Investments Limited. Pressure vessels closure means. 4,365,726, Cl. 220-211.000.

Brodovsky, Vladimir N.: *See—*
Bai, Roland D.; Brodovsky, Vladimir N.; Ivanov, Evgeny S.; Kanep, Alexandr A.; Feldman, Alexandr V.; and Chabanov, Alim I., 4,366,428, Cl. 318-809.000.

Broemer, Heinz; Adam, Werner; and Hedrich, Friedhelm, to Ernst Leitz Wetzlar GmbH. Prosthesis parts provided with a coating of a bio-active material. 4,365,356, Cl. 3-1.900.

Brounshtein, Viktor B.; Petrov, Vladimir I.; Otsup, Rudolf R.; Ignatieva, Galina P.; Kozlovsky, Vladlen V.; Lipshits, Leonard Y.; Zhuravlev, Oleg V.; Koba, Mikhail G.; Seliverstov, Konstantin B.; Igisheva, Tamara A.; Drobyazko, Petr A.; Motin, Anatoly I.; Fot, Viktor D.; Yakimov, Lev T.; and Kuznetsov, Boris G. Apparatus for dissolving polydisperse ores. 4,366,124, Cl. 422-278.000.

Broussaud, Georges J. G., to Le Materiel Telephonique Thomson-CSF. Optical switch for a very large number of channels. 4,365,863, Cl. 350-96.150.

Brouwer, Gerardus J.; and Arnold, William, to Brouwer Turf Equipment Limited. Forklift vehicle. 4,365,921, Cl. 414-347.000.

Brouwer Turf Equipment Limited: *See—*
Brouwer, Gerardus J.; and Arnold, William, 4,365,921, Cl. 414-347.000.

Brown, Bruce W.; Copple, Virgil E.; and Wilson, Carroll K. Glazed liver coated biscuit or kibble for pets. 4,366,175, Cl. 426-92.000.

Brown, Wilburn K., to Pettibone Corporation. Free-hanging load carrier for boom, with brake. 4,365,926, Cl. 414-685.000.

Brown & Williamson Tobacco Corporation: *See—*
Johnson, Robert R., 4,365,641, Cl. 131-336.000.

Brundin, Jan-Olof, to AB Medline. Device for members for closing body passages. 4,365,621, Cl. 128-1.00R.

Bruno, Joseph S.; and Blanchard, Eugene J., to United States of America, Agriculture. Process for modifying cellulosic fabrics for improved heat transfer printing. 4,365,966, Cl. 8-471.000.

Brustad, John T.: *See—*
Hagedon, Gary L.; and Brustad, John T., 4,366,483, Cl. 343-113.00R.

Bruynes, Cornelis A.; and Jurriens, Theodorus K., to Gist-Brocades N.V. Process for preparing 3'bromo-desacetoxycephalosporanic acid sulfoxide compounds. 4,366,315, Cl. 544-16.000.

Buchel, Karl H.: *See—*
Kramer, Wolfgang; Timmler, Helmut; Buchel, Karl H.; Brandes, Wilhelm; Frohberger, Paul-Ernst; and Scheinpflug, Hans, 4,366,152, Cl. 424-245.000.

Bucyrus-Erie Company: *See—*
Ecker, Frank A.; Jensen, Theodore G.; and Christensen, Norman B., 4,365,429, Cl. 37-103.000.

Buddy L Corporation: *See—*
Crosman, Dorland L., 4,366,375, Cl. 235-100.000.

Buell, Calvin D. Nautical chart case. 4,365,433, Cl. 40-391.000.

Buenzli, Charles W., Jr.: *See—*
Shaber, Gary S.; and Buenzli, Charles W., Jr., 4,365,895, Cl. 356-444.000.

Bugash, Eckhard; and Kubina, George. Solar energy heating system. 4,365,617, Cl. 126-425.000.

Buhrer, Carl F., to GTE Laboratories Incorporated. Vacuum-tight assembly particularly for a discharge tube. 4,366,410, Cl. 313-221.000.

Builders Concrete, Inc.: *See—*
Sluys, Wesley W., 4,365,914, Cl. 405-221.000.

Bujadoux, Karel; Neyer, Jean-Marie; and Houzeaux, Jean-Pierre, to Societe Chimique des Charbonnages-CdF Chimie. Anhydrous magnesium chloride from grignard reagents. 4,366,140, Cl. 423-498.000.

Bunce, Roger A.; Carter, Timothy J. N.; Kennedy, John H.; Kricka, Larry J.; and Whitehead, Thomas P. Apparatus and method for luminescent determination of concentration of an analyte in a sample. 4,366,118, Cl. 422-57.000.

Bunker Ramo Corporation: *See—*
Hutter, Harold G.; and Francis, Leonard J., 4,365,859, Cl. 339-97.00P.

Burchfiel, John R., Jr.: *See—*
Berglund, Neil C.; and Burchfiel, John R., Jr., 4,366,540, Cl. 364-200.000.

Burdeska, Kurt; Kabas, Guglielmo; and Weber, Kurt, to Ciba-Geigy Corporation. 4-Heterocyclyl-4'-vinylstilbenes. 4,366,189, Cl. 427-157.000.

Burfeindt, Heinz: *See—*
Langer, Manfred; Burfeindt, Heinz; and Stuart, Patrick, 4,365,933, Cl. 415-217.000.

Burmeister, Eugene V.: *See—*
Spangler, Richard M.; Burmeister, Eugene V.; Cada, Frank E.; Covington, Wayne F.; Christopher, Chris J.; Judd, Myles A.; Wenninger, Freddie W.; Watson, Robert E.; and Simcoe, Kent W., 4,366,553, Cl. 364-900.000.

Burnett, Ralph G., to American Casting and Manufacturing Company. Sealing device. 4,365,833, Cl. 292-318.000.

Burns, Robert B., to Texaco Development Corporation. Tension leg platform assembly. 4,365,912, Cl. 405-60.000.

Burroughs Wellcome Co.: *See—*
Hodgson, Gordon L., Jr., 4,366,158, Cl. 424-258.000.

Burylev, Boris P.: *See—*
Karpov, Jury A.; Burylev, Boris P.; Glavin, German G.; Kvin, Valeria E.; Kovalev, Vasily V.; Natanson, Konstantin J.; Orlov, Vladimir V.; Kuznetsov, Lev B.; Zaitsev, Anatoly M.; Kartsev, Valentin E.; Morozov, Vladimir M.; and Kovalev, Gennady G., 4,365,969, Cl. 436-75.000.

Buser, Hansjorg; and Morand, Adolf, to Ciba-Geigy Ltd. Method for processing photographic silver dye-bleach materials and suitable preparations. 4,366,232, Cl. 430-390.000.

Bushey, William R., to Du Pont de Nemours, E. I., and Company. Conductor compositions. 4,366,094, Cl. 252-512.000.

Busker, Leroy H.: *See—*
Gordon, Ambrose L., Jr.; and Busker, Leroy H., 4,366,025, Cl. 162-358.000.

Busse, Charles E.: *See—*
Cress, Allan K.; and Busse, Charles E., 4,365,460, Cl. 53-563.000.

Buttazzoni, Bernard: *See—*
Ghommidh, Josette; Buttazzoni, Bernard; Constant, Georges; Diloy, Etienne; and Morancho, Roland, 4,366,183, Cl. 427-2.000.

Buttner, Ronald; Dolowich, Herbert; and Zelman, Chaim, to Dolowich, Herbert. Quick release locking mechanism. 4,365,535, Cl. 84-421.000.

Byrum, Barney L. Motion and orientation sensor. 4,365,421, Cl. 33-366.000.

C. R. Bard, Inc.: *See—*
Bare, Rex O.; and Robinson, Earl F., 4,365,634, Cl. 128-640.000.

Cada, Frank E.: *See—*
Spangler, Richard M.; Burmeister, Eugene V.; Cada, Frank E.; Covington, Wayne F.; Christopher, Chris J.; Judd, Myles A.; Wenninger, Freddie W.; Watson, Robert E.; and Simcoe, Kent W., 4,366,553, Cl. 364-900.000.

Cain, Bruce F., deceased (by Cain, Patricia J., executor); and Atwell, Graham J., to Development Finance Corporation of New Zealand. Compound having antitumor properties. 4,366,318, Cl. 546-106.000.

Cain, Patricia J., executor: *See—*
Cain, Bruce F., deceased; and Atwell, Graham J., 4,366,318, Cl. 546-106.000.

Caldwell, Donald L.; and Hazelrigg, Mark J., Jr., to Dow Chemical Company, The. Substituted cobalt oxide spinels. 4,366,042, Cl. 204-290.00F.

Cam Gears Limited: *See—*
Adams, Frederick J., 4,365,683, Cl. 180-132.000.
Turner, Robert, 4,365,684, Cl. 180-133.000.

Cameron, Jacquelyn J.; and Myers, Chester D., to General Foods, Inc. Novel protein isolation procedure. 4,366,097, Cl. 260-123.500.

Campbell, Andrew B.: *See*—
Boyadjieff, George I.; and Campbell, Andrew B., 4,365,676, Cl. 175-61.000.
Campbell, Neil E.: *See*—
Ruggieri, Albert P.; Marinaccio, Frank J.; Campbell, Neil E.; Allen, Wayne; Moum, Stanley; Malatesta, Paul F.; Pietrowski, Joseph J.; and Schwartz, Leonard H., 4,365,590, Cl. 119-15.000.
Campbell, Rouel R. Motion picture camera. 4,365,876, Cl. 352-84.000.
Canada, Emily J., to Eli Lilly and Company. 1-Benzoyl-3-(6-oxopyridazinyl)ureas, compositions, and insecticidal method. 4,366,155, Cl. 424-250.000.
Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence: *See*—
Couture, Joseph E. G.; and Twardawa, Philip A., 4,365,557, Cl. 102-341.000.
Candela Corporation: *See*—
Bees, George L., 4,366,570, Cl. 372-70.000.
Canon, Inc.: *See*—
Tokuda, Ryuji; and Andresen, Bernhard H., 4,365,878, Cl. 354-25.000.
Canon Kabushiki Kaisha: *See*—
Hirata, Noritsugu; and Takimoto, Hiroyuki, 4,365,875, Cl. 352-25.000.
Hosono, Nagao; Miyake, Nobuyuki; Kanbe, Junichiro; Tsukada, Shusei; and Arao, Kozo, 4,365,586, Cl. 118-652.000.
Kawanabe, Tsuyoshi, 4,366,545, Cl. 364-569.000.
Kitamura, Takashi, 4,366,492, Cl. 346-160.000.
Kiuchi, Masayoshi; Kawamura, Masaharu; and Murakami, Hiroyasu, 4,365,880, Cl. 354-60.00L.
Tsuda, Shin; Kurabayashi, Sadasuke; and Ogata, Minoru, 4,366,505, Cl. 358-260.000.
Tsunekawa, Tokuichi; Date, Nobuaki; Aizawa, Hiroshi; Hosoe, Kazuya; and Urushibara, Kazunori, 4,366,501, Cl. 358-310.000.
Carandang, Carmen M., to Amchem Products, Inc. Non-volatile hot stripper. 4,366,002, Cl. 134-2.000.
Carasso, Marino G.: *See*—
de Haan, Maarten R.; and Carasso, Marino G., 4,366,564, Cl. 369-48.000.
Caries, Jean-Claude, to Commissariat a l'Energie Atomique. Process for the preparation of adsorbent materials. 4,366,090, Cl. 252-459.000.
Carl Still GmbH & Co. K.G., Firma: *See*—
Abendroth, Werner, 4,366,028, Cl. 202-248.000.
Carl Zeiss-Stiftung: *See*—
Kohler, Kurt, 4,365,521, Cl. 74-471.0XY.
Muchel, Franz, 4,365,871, Cl. 350-414.000.
Carlberg, David, to Engineering Systems Corporation. Adjustable sprinkler system. 4,365,750, Cl. 239-276.000.
Carlomagno, William D., to Raychem Corporation. Apparatus for installing sleeves on substrates. 4,365,400, Cl. 29-235.000.
Carlqvist, Stig G., to CMC Aktiebolag. Module for constructing a double-acting four-cylinder Stirling engine. 4,365,474, Cl. 60-525.000.
Carre, Jean J.; and Riquart, Christian, to Societe Anonyme D.B.A. Braking correcting valve for a dual braking circuit. 4,365,844, Cl. 303-6.00C.
Carrier Corporation: *See*—
Carson, Ernest A.; and Anderson, Gordon K., 4,365,484, Cl. 62-239.000.
Carrish, Jeffrey J.: *See*—
Fotland, Richard A.; and Carrish, Jeffrey J., 4,365,549, Cl. 101-1.000.
Carson, Charles, to Fort Wayne Wire Die, Inc. Wire drawing die and method of making the same. 4,365,502, Cl. 72-467.000.
Carson, Ernest A.; and Anderson, Gordon K., to Carrier Corporation. Transport refrigeration machine. 4,365,484, Cl. 62-239.000.
Carson, Harry B.: *See*—
Olin, Eric J.; Carson, Harry B.; and Ball, Brian, 4,366,050, Cl. 209-167.000.
Carstab Corporation: *See*—
Molt, Kenneth R., 4,366,277, Cl. 524-102.000.
Carter, J. Warne, Jr.; and Carter, J. Warne, Sr., to Carter Wind Power. Wind-driven generator apparatus and method of making blade supports therefor. 4,366,387, Cl. 290-55.000.
Carter, J. Warne, Sr.: *See*—
Carter, J. Warne, Jr.; and Carter, J. Warne, Sr., 4,366,387, Cl. 290-55.000.
Carter, Timothy J. N.: *See*—
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Carter Wind Power: *See*—
Carter, J. Warne, Jr.; and Carter, J. Warne, Sr., 4,366,387, Cl. 290-55.000.
Casazza, Annamaria: *See*—
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Bargiotti, Alberto; Cassinelli, Giuseppe; Penco, Sergio; Arcamone, Federico; and Casazza, Annamaria, 4,366,149, Cl. 424-180.000.
Castro, German O.; and Sovia, Frederick C., to Dow Chemical Company, The. Making jacketed lined pipe. 4,365,404, Cl. 29-455.00R.
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Marques, Jerry G.; and Cruthis, Robert D., 4,365,541, Cl. 98-2.110.
Schexnayder, Lawrence F.; and Spivey, William J., Jr., 4,365,473, Cl. 60-447.000.
Caurant, Robert; and Leduc, Alain, to Thomson-CSF. Tank-gun loading simulator for training purposes. 4,365,959, Cl. 434-24.000.
Cave, David L.; and Davis, Walter R., to Motorola, Inc. Floating NPN current mirror. 4,366,445, Cl. 330-257.000.
Cave, James P.: *See*—
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Cedolin, Riccardo; Chiarottino, Wolmer; Giandonato, Giuseppe; Giorcelli, Silvanc; Martinengo, Giorgio; Sofi, Giorgio; and Villone, Sergio, to CSELT - Centro Studi e Laboratori Telecomunicazioni S.p.A. Modular signal-processing system. 4,366,535, Cl. 364-200.000.
Celanese Corporation: *See*—
Witt, Enrique R.; Humphrey, William J.; and Cave, James P., 4,366,059, Cl. 210-615.000.
Centro Ricerche Fiat S.p.A.: *See*—
Maggioni, Virginio, 4,365,644, Cl. 137-102.000.
Cereal Enterprisess, Inc.: *See*—
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Chabanov, Alim I.: *See*—
Bai, Roland D.; Brodovsky, Vladimir N.; Ivanov, Evgeny S.; Kanep, Alexandr A.; Feldman, Alexandr V.; and Chabanov, Alim I., 4,366,428, Cl. 318-809.000.
Chamberlin, Ronald D.: *See*—
Korach, Malcolm; and Chamberlin, Ronald D., 4,366,041, Cl. 204-252.000.
Chambers, Edwin G.: *See*—
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Champion Conveyor Components Limited: *See*—
Bright, Donald F., 4,365,706, Cl. 198-499.000.
Champion International Corporation: *See*—
Swanson, Elmer G., 4,365,710, Cl. 206-386.000.
Webinger, George P., 4,365,739, Cl. 229-32.000.
Chan, Hak-Foon: *See*—
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Winter, William E.; and Chang, Bong H., 4,366,047, Cl. 208-89.000.
Chang, Robert W. H., to Minnesota Mining & Manufacturing Co. Compositions and method for reducing elution of therapeutic agents from teeth. 4,366,146, Cl. 424-52.000.
Changani, Pushpkumar D.; Peacock, Donald G.; and Roberts, David, to Raychem Corporation. Heat shrinkable wraparound closures. 4,366,201, Cl. 428-157.000.
Chao, James C.; and Huibers, Derk T. A., to Hydrocarbon Research, Inc. Catalytic hydrogenolysis of alditols to product glycerol and polyols. 4,366,332, Cl. 568-863.000.
Chapalain, Jean-Pierre. Device for locking and adjusting straps for lifting and securing apparatuses. 4,365,391, Cl. 24-197.000.
Chaplain, Jacques, to Armosig S.A. Apparatus for the continuous manufacture of finned tubular sections made of synthetic material, and finned tubular sections. 4,365,948, Cl. 425-417.000.
Chapman, Marion R., Jr. Suction dredge cutter head. 4,365,427, Cl. 37-57.000.
Chauvin, Yves: *See*—
Le Pennec, Dominique; Commereuc, Dominique; and Chauvin, Yves, 4,366,087, Cl. 252-431.00C.
Chemische Werke Huls, A.G.: *See*—
Lukaschek, Wolfgang; and Marx, Wolfgang, 4,366,285, Cl. 524-521.000.
Ruter, Jorn, 4,366,270, Cl. 523-307.000.
Chesley F. Carlson Company: *See*—
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Aoyagi, Edward I., 4,365,989, Cl. 71-67.000.
Bertelsen, Corey A.; and Handel, Gene M., 4,366,046, Cl. 208-11.00R.
Donaghey, Lee F., 4,366,336, Cl. 136-256.000.
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Cedolin, Riccardo; Chiarottino, Wolmer; Giandonato, Giuseppe; Giorcelli, Silvano; Martinengo, Giorgio; Sofi, Giorgio; and Villone, Sergio, 4,366,535, Cl. 364-200.000.
Chicago Display Company: *See*—
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Chisholm, William M., to Western Electric Company, Inc. Method of and apparatus for assembling intermediate-web held terminal pins. 4,365,398, Cl. 29-845.000.
Chisso Corporation: *See*—
Ando, Masao, 4,366,356, Cl. 219-10.510.
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Chow, William W.; and Fields, Davis S., Jr., to International Business Machines Corporation. Multi-track head assembly. 4,366,518, Cl. 360-121.000.
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Christiansen, David W.; and Smith, Bob G., to United States of America, Energy. Nuclear reactor fuel assembly duct-tube-to-handling-socket attachment system. 4,366,116, Cl. 376-446.000.
Christopher, Chris J.: *See*—
Spangler, Richard M.; Burmeister, Eugene V.; Cada, Frank E.; Covington, Wayne F.; Christopher, Chris J.; Judd, Myles A.;

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Chukhanov, Zinovy F.; Chukhanov, Zinovy Z.; Tsuprov, Sergei A.; Lyashenko, Ivan V.; Apter, Danil M.; Nikolaev, Anatoly M.; and Karasev, Vadim A. Method and apparatus for heat processing pulverized brown coal. 4,366,043, Cl. 208-8.00R.
Chukhanov, Zinovy Z.: *See*—
Chukhanov, Zinovy F.; Chukhanov, Zinovy Z.; Tsuprov, Sergei A.; Lyashenko, Ivan V.; Apter, Danil M.; Nikolaev, Anatoly M.; and Karasev, Vadim A., 4,366,043, Cl. 208-8.00R.
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Chung, Raymond: *See*—
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Chwae, John C. Drill point grinding machine. 4,365,444, Cl. 51-94.00R.
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Elmore, Charles E.; and Harmon, David H., 4,366,122, Cl. 422-133.000.
Guth, Christian; and Binz, Jorg, 4,365,967, Cl. 8-477.000.
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Kartschmaroff, Peter; Forster, Ewald; and Schaffner, Armin, 4,366,136, Cl. 423-331.000.
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Cicero, Frank. Marine scoopers for porpoises and tuna - porpoise-escape-way. 4,365,575, Cl. 114-255.000.
Cincinnati Milacron Inc.: *See*—
Baily, Oliver L., 4,365,928, Cl. 414-735.000.
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Citizen Watch Co., Ltd.: *See*—
Kurihara, Toshio; and Mizutani, Nagao, 4,365,550, Cl. 101-93.040.
Clack, T. Dean: *See*—
Milburn, Wanda O.; and Clack, T. Dean, 4,365,874, Cl. 351-243.000.
Clairol Incorporated: *See*—
Kunz, Raymond W.; and Walter, Henry J., 4,366,365, Cl. 219-225.000.
Clark, David R., to Ciba-Geigy Corporation. Corrosion inhibited compositions. 4,366,076, Cl. 252-34.000.
Clark Equipment Company: *See*—
Bauer, James J., 4,365,687, Cl. 180-315.000.
Clark, Melville, Jr.; and Luce, David A., to Clark, Melville, Jr. Musical instrument. 4,365,533, Cl. 84-1.240.
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Clendening, Steven J.; and Adams, Tello D., to Rockwell International Corporation. Divide by three clock divider with symmetrical output. 4,366,394, Cl. 307-225.00R.
Cleveland Chair Company: *See*—
Jackson, William R.; Chambers, Edwin G.; Kraus, Albert J.; and Lerdon, Wesley E., 4,365,836, Cl. 297-85.000.
Clinton, Albert J., deceased (by American Fletcher National Bank and Trust Company, Administrator); and O'Doherty, George O. P., to Eli Lilly and Company. Anticoccidial combinations. 4,366,168, Cl. 424-283.000.
Clitherow, John W.; Price, Barry; Bradshaw, John; and Martin-Smith, Michael, to Glaxo Group Limited. Amine derivatives. 4,366,164, Cl. 424-267.000.
Cloutier, Charles C. Controlled flooding and skimming apparatus for beach cleaning. 4,366,052, Cl. 210-199.000.
CMC Aktiebolag: *See*—
Carlqvist, Stig G., 4,365,474, Cl. 60-525.000.
Coach & Car Equipment Corporation: *See*—
Kehl, Norman J.; and Magnuson, Richard C., 4,365,840, Cl. 297-443.000.
Cochennec, Jean-Yves. System for interconnecting subscribers lines to an automatic digital telephone switching system. 4,366,566, Cl. 370-53.000.
Codex Corporation: *See*—
Miller, Charles K., 4,366,547, Cl. 364-724.000.
Coetzer, Johan; and Thackeray, Michael M., to South African Inventions Development Corp. Electrochemical cell. 4,366,215, Cl. 429-199.000.
Coffman, Thomas E. Arrow fletching apparatus. 4,366,022, Cl. 156-538.000.
Cogar, George R. Heating system. 4,365,742, Cl. 237-81.000.
Cole, David B., to GTE Products Corporation. Switchboard housing apparatus. 4,366,528, Cl. 361-429.000.
Colgate-Palmolive Company: *See*—
Ehrlich, Robert L., 4,365,853, Cl. 312-42.000.
Monick, John A., 4,365,971, Cl. 44-7.00C.
Collin, Rolf: *See*—
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Comes, Roger A.: *See*—
Haut, Stephen A.; and Comes, Roger A., 4,366,317, Cl. 544-336.000.
Commereuc, Dominique: *See*—
Le Pennec, Dominique; Commereuc, Dominique; and Chauvin, Yves, 4,366,087, Cl. 252-431.00C.
Commissariat a l'Energie Atomique: *See*—
Caries, Jean-Claude, 4,366,090, Cl. 252-459.000.
Lauro, Fernand, 4,366,027, Cl. 202-174.000.
Compagnie du Roneo: *See*—
Tellier, Pierre; Demaille, Jean-Pierre; and Doillon, Jean, 4,365,561, Cl. 108-7.000.
Compagnie International des Pieux Armes Frankignoul: *See*—
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Constant, Georges: *See*—
Ghommidh, Josette; Buttazzoni, Bernard; Constant, Georges; Diloy, Etienne; and Morancho, Roland, 4,366,183, Cl. 427-2.000.
Construction Products Research, Inc.: *See*—
Babcock, Warner K., 4,366,209, Cl. 428-446.000.
Continental Group, Inc., The: *See*—
Harry, Ieuan L.; Krihsnakumar, Suppayan M.; Jolly, Walter R.; and Beck, Martin H., 4,365,950, Cl. 425-534.000.
Control Data Corporation: *See*—
Van Hatten, David A., 4,366,480, Cl. 340-825.510.
Convers, Alain; Torck, Bernard; Euzen, Jean-Paul; and Amigues, Pierre, to Institut Francais du Petrole. Process for producing ethers by reacting olefins with alcohols. 4,366,327, Cl. 568-697.000.
Cook, Edward H., Jr.: *See*—
Schulz, Arthur C.; Cook, Edward H., Jr.; and Viswanathan, Krishnan, 4,366,037, Cl. 204-98.000.
Cook, Sidney F., to Cook, Stolowitz and Frame. Offshore submarine storage facility for highly chilled liquified gases. 4,365,576, Cl. 114-265.000.
Cook, Stolowitz and Frame: *See*—
Cook, Sidney F., 4,365,576, Cl. 114-265.000.
Cookson, Alan H.; Dale, Steinar J.; and Bolin, Philip C., to Westinghouse Electric Corp. Semi-flexible gas-insulated transmission line using electric field stress shields. 4,366,339, Cl. 174-21.0JS.
Cooper, Geoffrey A.; and Ward, Donald W., to Pye (Electronic Products) Ltd. Arc discharge lamp having large anode radiating surface. 4,366,408, Cl. 313-193.000.
Cooper Industries, Inc.: *See*—
Barker, Stephen F., 4,366,463, Cl. 338-69.000.
Cooper, Richard W., deceased; and by Cooper, Ruth E., Executrix. Arrow launcher. 4,365,610, Cl. 124-5.000.
Cooper, Ruth E., Executrix: *See*—
Cooper, Richard W., deceased; and Cooper, Ruth E., Executrix, 4,365,610, Cl. 124-5.000.
Copal Company Limited: *See*—
Ishiguro, Yasuo, 4,365,879, Cl. 354-38.000.
Copple, Virgil E.: *See*—
Brown, Bruce W.; Copple, Virgil E.; and Wilson, Carroll K., 4,366,175, Cl. 426-92.000.
Corbett, David F., to Beecham Group Limited. β-Lactam antibiotics, preparation and use. 4,366,167, Cl. 424-274.000.
Cordell Engineering, Inc.: *See*—
Uiga, Endel, 4,365,891, Cl. 355-59.000.
Cordis Dow Corp.: *See*—
Papanek, Thomas H.; Egler, Mark S.; and Landau, Julian I., 4,366,061, Cl. 210-647.000.
Corey, Garland G., to Sterling Drug Inc. Device improving solubility of solid material in a closed system. 4,365,362, Cl. 4-228.000.
Cormier, Alan D.: *See*—
Kearney, Susan D.; Dreier, Gustav H.; and Cormier, Alan D., 4,366,038, Cl. 204-195.00M.
Cornelis, Christiaan A., to IHC Holland N.V. System and method for determining the well load of a hopper suction dredge. 4,365,509, Cl. 73-290.00V.
Corning Glass Works: *See*—
Boettner, George B., 4,365,987, Cl. 65-137.000.
Nayak, Ashok L., 4,365,986, Cl. 65-136.000.
Palmquist, Ronald W., 4,366,571, Cl. 373-30.000.
Coronel, Paul K. Convertible delta wing aircraft. 4,365,774, Cl. 244-46.000.
Costa, Allan. Cosmetic applicator and associated method. 4,365,642, Cl. 132-88.500.
Cotter, Theodore P., to United States of America, Energy. Isotope separation apparatus and method. 4,366,379, Cl. 250-251.000.
Couture, Joseph E. G.; and Twardawa, Philip A., to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence. Air deployable incendiary device. 4,365,557, Cl. 102-341.000.

Covington, Wayne F.: *See—*
Spangler, Richard M.; Burmeister, Eugene V.; Cada, Frank E.; Covington, Wayne F.; Christopher, Chris J.; Judd, Myles A.; Wenninger, Freddie W.; Watson, Robert E.; and Simcoe, Kent W., 4,366,553, Cl. 364-900.000.

Covini, Romano: *See—*
Le Van Mao, Raymond; Pilati, Orlando; Moretti, Enrico; Covini, Romano; and Genoni, Fausto, 4,366,135, Cl. 423-329.000.

Covitch, Michael J., to Diamond Shamrock Corporation. Method for catalyzed conversion of perfluorocarbon cationic exchange functionality with SF_4. 4,366,262, Cl. 521-33.000.

Cowley, Andrew G.; Payne, David N.; and Watson, Paul M., to National Research Development Corporation. Optical fibre multiport couplers. 4,365,864, Cl. 350-96.160.

Cowley, Gerald, to Erco Industries Limited. Small scale chlorine dioxide plant. 4,366,120, Cl. 422-106.000.

Craig, Gary W.; and Langston, Jack W., to Loffland Brothers Company. Elevating catwalk. 4,365,692, Cl. 187-8.720.

Crean, Peter A.; and Agulnek, Martin A., to Xerox Corporation. Image magnification and demagnification system. 4,366,508, Cl. 358-287.000.

Cress, Allan K.; and Busse, Charles E., to Maryland Cup Corporation. Method and apparatus for manufacturing foam plastic containers by use of a tubular forming mandrel. 4,365,460, Cl. 53-563.000.

Criswell, Peter B.: *See—*
Kregness, Glen R.; and Criswell, Peter B., 4,366,548, Cl. 364-748.000.

Crosman, Dorland L., to Buddy L Corporation. Three-coin register toy bank. 4,366,375, Cl. 235-100.000.

Crotti, Aldo: *See—*
Grilli, Walter; Crotti, Aldo; and Barchetti, Giuseppe, 4,365,848, Cl. 305-54.000.

Crowley, Daniel L.: *See—*
Werner, Raymond J.; Jennings, William J.; Crowley, Daniel L.; and Smith, Frank J., 4,366,292, Cl. 525-240.000.

Cruthis, Robert D.: *See—*
Marques, Jerry G.; and Cruthis, Robert D., 4,365,541, Cl. 98-2.110.

Cryder, Albert H.: *See—*
Mueller, Hans W.; Shattuck, Richard E.; Cryder, Albert H.; and Nelson, John L., 4,365,904, Cl. 400-568.000.

CSELT - Centro Studi e Laboratori Telecomunicazioni S.p.A.: *See—*
Cedolin, Riccardo; Chiarottino, Wolmer; Giandonato, Giuseppe; Giorcelli, Silvano; Martinengo, Giorgio; Sofi, Giorgio; and Villone, Sergio, 4,366,535, Cl. 364-200.000.

Csovari, Mihaly: *See—*
Czegledi, Bela; Csovari, Mihaly; Erdelyi, Miklos; Streker, Lajos; Toth, Istvan; Szabo nee Mogyorosi, Katalin; Riederauer, Szilard; and Szentgyorgyi, Geza, 4,366,129, Cl. 423-112.000.

CTS Corporation: *See—*
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Cubic Western Data: *See—*
Howerton, Darrell V., 4,365,718, Cl. 209-586.000.
Miller, Gregory E., 4,365,796, Cl. 271-274.000.

Cubit Corporation: *See—*
Davis, John M., 4,365,454, Cl. 52-586.000.

Culbert, Robert M.; and Miller, Charles E., to Farr Company. Air filter assembly. 4,365,980, Cl. 55-315.000.

Cushman, Glenn F., to Northrop Corporation. Torquer current readout system for inertial instrument employing current controlled oscillator. 4,366,467, Cl. 340-347.0AD.

Custer, Peter A.: *See—*
Bird, George; and Custer, Peter A., 4,366,217, Cl. 430-11.000.

Cutler, John H.: *See—*
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Cutter Laboratories, Inc.: *See—*
Jensen, Lynn E., 4,366,384, Cl. 250-575.000.

Czegledi, Bela; Csovari, Mihaly; Erdelyi, Miklos; Streker, Lajos; Toth, Istvan; Szabo nee Mogyorosi, Katalin; Riederauer, Szilard; and Szentgyorgyi, Geza, to Tatabanyal Szenbanyak. Process for producing alumina and ferric oxide from aluminium carriers with high iron and silicon content. 4,366,129, Cl. 423-112.000.

Daghe, Joseph L.: *See—*
Hauffe, William L.; and Daghe, Joseph L., 4,365,393, Cl. 24-279.000.

Dai Nippon Insatsu Kabushiki Kaisha: *See—*
Kodera, Tokio; Hoshino, Masaru; and Hyakutome, Kimiaki, 4,366,125, Cl. 422-295.000.

Daicel Chemical Industries, Ltd.: *See—*
Soma, Eichi; Kobayashi, Kohei; Karakawa, Takuro; Kato, Shigeyoshi; and Uchida, Kiichi, 4,366,308, Cl. 536-128.000.

Daido Metal Company Ltd.: *See—*
Mori, Sanae, 4,365,995, Cl. 419-6.000.

Daimler-Benz Aktiengesellschaft: *See—*
Lutz, Horst, 4,366,466, Cl. 340-64.000.
Merkle, Josef, 4,365,825, Cl. 280-777.000.

d'Alayer de Costemore d'Arc, Stephane M.; and Lockey, David J. Method and apparatus for controlling tape transport apparatus for cassettes. 4,366,371, Cl. 235-92.0MP.

Dale, Steinar J.: *See—*
Cookson, Alan H.; Dale, Steinar J.; and Bolin, Philip C., 4,366,339, Cl. 174-21.0JS.

Daly, Christopher N.: *See—*
Loughman, James; Daly, Christopher N.; and Washington, Ronald A. C., 4,365,633, Cl. 128-419.0PG.

Danforth, Donald W., to Bolton - Emerson, Inc. Apparatus and method for defibering unconventional material. 4,365,761, Cl. 241-21.000.

Daniel, Chelliah, to Ashland Oil, Inc. Support for a phosphate-containing catalyst. 4,366,088, Cl. 252-435.000.

Darm, William J., to United Air Specialists, Inc. Process gas treating apparatus. 4,365,480, Cl. 62-82.000.

Das, Asha. Dual purpose periodontal surgical instrument. 4,365,957, Cl. 433-144.000.

Date, Nobuaki: *See—*
Tsunekawa, Tokuichi; Date, Nobuaki; Aizawa, Hiroshi; Hosoe, Kazuya; and Urushibara, Kazunori, 4,366,501, Cl. 358-310.000.

Davidson, James D. Shutter shields (TM) in combination with an outer and inner glass area means. 4,365,441, Cl. 49-63.000.

Davis, Arthur M., to Williams Research Corporation. Self aligning segmented shaft seal. 4,365,817, Cl. 277-188.00R.

Davis, John M., to Cubit Corporation. Construction system. 4,365,454, Cl. 52-586.000.

Davis, Walter R.: *See—*
Cave, David L.; and Davis, Walter R., 4,366,445, Cl. 330-257.000.

Davison, John F.: *See—*
Fitzpatrick, Donald C.; Gerard, Peter A.; and Davison, John F., 4,365,797, Cl. 271-303.000.

De Angelis, Lucio: *See—*
Alessandrini, Paolo; De Angelis, Lucio; Galluzzi, Fabrizio; Losciale, Francesco; and Scafe', Ernesto, 4,366,337, Cl. 136-25[illegible].000.

DeBonte, William J.; and Lynch, Karen, to Exxon Research and Engineering Co. Method and apparatus for tuning ink jets. 4,366,490, Cl. 346-140.00R.

de Cremoux, Baudouin; Poulain, Pierre; and Sol, Nicole, to Thomson-CSF. Photovoltaic cell usable as a solar cell. 4,366,334, Cl. 136-255.000.

Deepsea Ventures, Inc.: *See—*
Latimer, John. P., 4,365,787, Cl. 254-106.000.

Defosse, Georges. Device for propelling an inflated ball by means of an elastic impact. 4,365,612, Cl. 124-54.000.

Degussa Aktiengesellschaft: *See—*
Knorre, Helmut; Langer, Manfred; Fauser, Friedrich; and Fischer, Willi, 4,366,049, Cl. 208-179.000.
Korte, Hans D.; and Muck, Gustav, 4,366,003, Cl. 134-18.000.
Kuhner, Gerhard; Berndt, Wilhelm; Rothbuhr, Lothar; and Wagner, Hans, 4,366,139, Cl. 423-449.000.

De Haan, Friedrich J., administrator: *See—*
Dijkmans, Eise C.; Franssen, Nico V., deceased; and De Haan, Friedrich J., administrator, 4,366,346, Cl. 179-1.00J.

de Haan, Maarten R.; and Carasso, Marino G., to U.S. Philips Corporation. Apparatus for writing digital information in a disc-shaped optically readable record carrier. 4,366,564, Cl. 369-48.000.

Dekker, Lambert: *See—*
Boden, Richard M.; Dekker, Lambert; Schmitt, Frederick L.; and Van Loveren, Augustinus G., 4,366,078, Cl. 252-174.110.

Delescluse, Charles L. L., to PCUK - Produits Chimiques Ugine Kuhlmann. Composition and process for the protection of materials against spots or stains. 4,366,300, Cl. 526-245.000.

Dellacha, Jorge P. M. Fluid displacement device. 4,365,931, Cl. 415-90.000.

Demaille, Jean-Pierre: *See—*
Tellier, Pierre; Demaille, Jean-Pierre; and Doillon, Jean, 4,365,561, Cl. 108-7.000.

de Montigny, Armand: *See—*
Friemann, Hans; Moretto, Hans-Heinrich; Alberts, Heinrich; de Montigny, Armand; and Toepsch, Hans, 4,366,286, Cl. 524-588.000.

Dennison Manufacturing Company: *See—*
Fotland, Richard A.; and Carrish, Jeffrey J., 4,365,549, Cl. 101-1.000.

Densen, Mark. Knock down container package and method of making same. 4,365,738, Cl. 229-23.00R.

D'Errico, Michael J.: *See—*
Engelhart, John E.; Angeles, Marshall R.; and D'Errico, Michael J., 4,366,170, Cl. 424-304.000.

Descal-A-Matic Corporation: *See—*
Lindler, Carl, 4,366,053, Cl. 210-222.000.

de Silva, Wijitha, to Hoffmann-La Roche Inc. Propionic acid oximes. 4,365,991, Cl. 71-121.000.

Dessaint, Andre L., to P C U K Produits Chimiques Ugine Kuhlmann. Copolymers containing fluorine and their use for the water-repellent and oil-repellent treatment of various substrates. 4,366,299, Cl. 526-243.000.

De Stasio, Joseph R. Apparatus for obtaining a test core. 4,365,784, Cl. 249-139.000.

Deutsche Gold- und Silberscheideanstalt Vormals Roessler: *See—*
Eisenmenger, Edith; Engel, Richard; Kuhner, Gerhard; Reck, Reinhold; Schaefer, Hans; and Voll, Manfred, 4,366,138, Cl. 423-445.000.

Devaux, Robert R.: *See—*
Zavatkay, Robert J.; Kurasz, George W.; and Devaux, Robert R., 4,365,690, Cl. 185-45.000.

Development Finance Corporation of New Zealand: *See—*
Cain, Bruce F., deceased; and Atwell, Graham J., 4,366,318, Cl. 546-106.000.

Dever, Francis. Tilting marine ladder. 4,365,689, Cl. 182-97.000.

Dewert, Heribert: *See—*
Holter, Heinz; Gresch, Heinz; Igelbuscher, Heinrich; Dewert, Heribert; Dzikowski, Berthold; and Twiehaus, Hans-Jurgen, 4,366,132, Cl. 423-242.000.

Dey, Arabinda N.; Bowden, William L.; and Bro, Per, to Duracell International Inc. Non-aqueous cell with fluid cathode depolarizer and corrodible cathode. 4,366,212, Cl. 429-101.000.

Dholakia, Anil R., to RCA Corporation. Apparatus and method for sharpening a cutting stylus. 4,365,447, Cl. 51-277.000.

Dia-Med, Inc.: *See*—
Johnson, Wilton C., 4,365,637, Cl. 128-734.000.

Diamond Shamrock Corporation: *See*—
Covitch, Michael J., 4,366,262, Cl. 521-33.000.

Dickman, John E.; and Donley, William B., to General Motors Corporation. Method of late programming read only memory devices. 4,365,405, Cl. 29-571.000.

Didier-Werke AG: *See*—
Block, Franz-Rudolf, 4,365,788, Cl. 266-44.000.

Didier-Werke, A.G.: *See*—
Fehling, Hans R.; and Hase, Horst, 4,365,731, Cl. 222-600.000.

Dietl, Josef: *See*—
Ast, Gerhard; Dietl, Josef; Helmreich, Dieter; Miller, Hans-Dieter; and Sirtl, Erhard, 4,366,024, Cl. 156-607.000.

Dijkmans, Eise C.; Franssen, Nico V., deceased; and by De Haan, Friedrich J., administrator, to U.S. Philips Corporation. Artificial reverberation apparatus. 4,366,346, Cl. 179-1.00J.

Dijkshoorn, Willem; Huizinga, Hindrik; and Pronk, Jacobus N., to Lever Brothers Company. Fat blend substantially free of hydrogenated and interesterified fats. 4,366,181, Cl. 426-603.000.

Diloy, Etienne: *See*—
Ghommidh, Josette; Buttazzoni, Bernard; Constant, Georges; Diloy, Etienne; and Morancho, Roland, 4,366,183, Cl. 427-2.000.

Dima, Attila F.: *See*—
Bahder, George; Katz, Carlos; Dima, Attila F.; and Knott, Adolf S., 4,365,947, Cl. 425-384.000.

Dinius, James H.; and Chung, Raymond, to Kimberly-Clark Corporation. Method of high fiber throughput screening. 4,366,111, Cl. 264-518.000.

Dinsmore, Edward S.: *See*—
Houston, Herbert J.; and Dinsmore, Edward S., 4,365,410, Cl. 29-762.000.

Disbrow, Lynnford E. Color standard method and apparatus. 4,365,882, Cl. 354-106.000.

Dissett, Walter L.; and Bawks, James R., to Tractech, Inc. Torque-proportioning differential with wedge block thrust bearing means. 4,365,524, Cl. 74-715.000.

Dittman, William J.; and Jameson, Calvin R., to Georgia Tech Research Institute. Multi-position waveguide switch. 4,366,452, Cl. 333-108.000.

Ditzig, Albert F., to Re-al, Inc. Method of making membrane contact switch. 4,365,408, Cl. 29-622.000.

Ditzig, Albert F., to RE-AL, Inc. Electrical slide switch of flush through design and method of mounting thereof. 4,366,351, Cl. 200-16.00R.

Dobney, William E., to Luke Limited. Refrigeration apparatus. 4,365,487, Cl. 62-498.000.

Doerschuk, David C.; and Mank, James F., to United States of America, Navy. Diving suit with neck and wrist seals. 4,365,351, Cl. 2-2.10R.

Doi, Atsutoshi: *See*—
Hirao, Motohisa; Nakamura, Michiharu; Doi, Atsutoshi; Tsuji, Shinji; Takeda, Yutaka; and Mori, Takao, 4,366,569, Cl. 372-46.000.

Doillon, Jean: *See*—
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Dolowich, Herbert: *See*—
Buttner, Ronald; Dolowich, Herbert; and Zelman, Chaim, 4,365,535, Cl. 84-421.000.

Dominion Engineering Works Limited: *See*—
Guerguerian, Rhual L., 4,365,763, Cl. 241-70.000.

Donaghey, Lee F., to Chevron Research Company. Age and heat stabilized photovoltaic cells. 4,366,336, Cl. 136-256.000.

Donald L. Morton & Associates: *See*—
Harrison, William H., 4,365,622, Cl. 128-1.300.

Donaldson Company, Inc.: *See*—
Dudrey, Denis J.; Herman, John T.; Wolde-Michael, Girma; and Radeztsky, Delmer L., 4,366,069, Cl. 210-788.000.
Wolde-Michael, Girma, 4,366,058, Cl. 210-519.000.

Donley, William B.: *See*—
Dickman, John E.; and Donley, William B., 4,365,405, Cl. 29-571.000.

Dornier, Peter; and Windischbauer, Florian, to Lindauer Dornier Gesellschaft mbH. Weaving machine with a protective covering. 4,365,650, Cl. 139-1.00R.

Dow Chemical Company, The: *See*—
Beale, Alvin F., Jr., 4,366,261, Cl. 521-25.000.
Caldwell, Donald L.; and Hazelrigg, Mark J., Jr., 4,366,042, Cl. 204-290.00F.
Castro, German O.; and Sovia, Frederick C., 4,365,404, Cl. 29-455.00R.
Keskkula, Henno; Maass, Donald A.; and McCreedy, Kathleen M., 4,366,289, Cl. 525-78.000.
Pilny, Richard J.; and Regulski, Thomas W., 4,366,194, Cl. 427-385.500.
Smith, Harry A., 4,366,306, Cl. 528-315.000.
Thomas, Lowell S.; and Petrella, Ronald V., 4,366,283, Cl. 524-413.000.
Tyler, Manuel C., Jr.; and McCrary, Avis L., 4,366,295, Cl. 525-482.000.
Wing, Richard E., 4,365,627, Cl. 128-202.220.
Winterton, Richard C., 4,366,092, Cl. 252-476.000.

Doyel, John S. Display stand for sheet material such as photographs. 4,365,434, Cl. 40-530.000.

Doyel, John S. One-piece sheetstock blank and a package made therefrom. 4,365,714, Cl. 206-461.000.

Draenert, Klaus, to Merck Patent Gesellschaft mit beschrankter Haftung. Surgical materials suitable for use with bone cements. 4,365,357, Cl. 3-1.910.

Dravo Corporation: *See*—
Pfeifer, William, 4,365,725, Cl. 220-96.000.

Dreier, Gustav H.: *See*—
Kearney, Susan D.; Dreier, Gustav H.; and Cormier, Alan D., 4,366,038, Cl. 204-195.00M.

Drobyazko, Petr A.: *See*—
Brounshtein, Viktor B.; Petrov, Vladimir I.; Otsup, Rudolf R.; Ignatieva, Galina P.; Kozlovsky, Vladlen V.; Lipshits, Leonard Y.; Zhuravlev, Oleg V.; Koba, Mikhail G.; Seliverstov, Konstantin B.; Igisheva, Tamara A.; Drobyazko, Petr A.; Motin, Anatoly I.; Fot, Viktor [illegible] Yakimov, Lev T.; and Kuznetsov, Boris G., 4,366,124, Cl. 422-278.000.

Ducarre, Alphonse: *See*—
Jarry, Philippe; Guittard, Pierre; and Ducarre, Alphonse, 4,366,009, Cl. 148-171.000.

Dudas, Lajos: *See*—
Benyak, Istvan; Dudas, Lajos; and Pohl, Oszkar, 4,366,106, Cl. 261-156.000.

Dudrey, Denis J.; Herman, John T.; Wolde-Michael, Girma; and Radeztsky, Delmer L., to Donaldson Company, Inc. Coolant recovery system. 4,366,069, Cl. 210-788.000.

Duffy, Richard J.: *See*—
Rodden, Philip J.; and Duffy, Richard J., 4,366,190, Cl. 427-183.000.

Dunlap, Richard M., to United States of America, Navy. Thermochemical energy storage and mechanical energy converter system. 4,365,475, Cl. 60-673.000.

Du Pont de Nemours, E. I., and Company: *See*—
Bushey, William R., 4,366,094, Cl. 252-512.000.

Duracell International Inc.: *See*—
Dey, Arabinda N.; Bowden, William L.; and Bro, Per, 4,366,212, Cl. 429-101.000.

Durapipe Limited: *See*—
Nash, David D., 4,365,949, Cl. 425-463.000.

Durenec, Peter, to United States of America, Army. Cryogenic refrigerator. 4,365,982, Cl. 62-6.000.

Duro-Test Corporation: *See*—
Walsh, Peter, 4,366,407, Cl. 313-112.000.

Durr, Heinrich: *See*—
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Durrum, Emmett L., to Eldex Laboratories, Inc. Multichannel pump. 4,365,943, Cl. 417-429.000.

Dussud, Jean-Benoit. Apparatus for handling materials by means of a ball bearing-mounted table. 4,365,699, Cl. 193-35.0SS.

Dynamit Nobel AG: *See*—
Naskar, Sasanka S.; and Pass, Reinhard, 4,366,100, Cl. 260-410.700.

Dzikowski, Berthold: *See*—
Holter, Heinz; Gresch, Heinz; Igelbuscher, Heinrich; Dewert, Heribert; Dzikowski, Berthold; and Twiehaus, Hans-Jurgen, 4,366,132, Cl. 423-242.000.

E. Beaudrey & Cie: *See*—
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E.N.I. Ente Nazionale Idrocarburi: *See*—
Alessandrini, Paolo; De Angelis, Lucio; Galluzzi, Fabrizio; Losciale, Francesco; and Scafe', Ernesto, 4,366,337, Cl. 136-258.000.

Early, Judson H.: *See*—
Off, Joseph W. A.; and Early, Judson H., 4,365,355, Cl. 2-247.000.

Eastman Kodak Company: *See*—
Anderson, Richard B.; and Kalenda, Norman W., 4,366,218, Cl. 430-17.000.
Arter, Thomas C.; and Barbee, Eugene H., 4,365,423, Cl. 34-23.000.
Kosinski, James J., 4,366,225, Cl. 430-207.000.
Kurtz, Clark N.; Mir, Jose M.; and Varner, Jerry R., 4,366,500, Cl. 358-75.000.
Mir, Jose M., 4,366,499, Cl. 358-75.000.
Raynolds, Peter W., 4,366,329, Cl. 568-755.000.
Shuttleworth, Leslie; and Mullen, David, 4,366,321, Cl. 549-68.000.
Specht, Donald P.; Houle, Conrad G.; and Farid, Samir Y., 4,366,228, Cl. 430-281.000.

Eaton Corporation: *See*—
Bopp, Warren G., 4,365,592, Cl. 123-41.120.
Bradshaw, Cyril E.; and Uitvlugt, Martin W., 4,365,608, Cl. 123-568.000.
Richardson, Kenneth J., 4,365,868, Cl. 350-334.000.

Ecker, Frank A.; Jensen, Theodore G.; and Christensen, Norman B., to Bucyrus-Erie Company. Maximum lift system for hydraulic hoe. 4,365,429, Cl. 37-103.000.

Ecker, Walter N., to Proform, Inc. Non-skid structural surface. 4,366,200, Cl. 428-156.000.

Edelstein, Fred: *See*—
Lijoi, Bruno; Cirrito, Vincent; and Edelstein, Fred, 4,366,526, Cl. 361-385.000.

Edinger, Franz K.: *See*—
Nitschko, Theodor; and Edinger, Franz K., 4,365,822, Cl. 280-625.000.

Edo-Aire Mitchell: *See*—
Nixon, John M., 4,365,511, Cl. 73-384.000.

Effa Etudes: *See*—
Ramel, Francois; and Rousseau, Alain, 4,365,517, Cl. 73-722.000.

EG&G Sealol, Inc.: *See*—
Johnson, Norman E.; and Vasconcellos, Daniel F., 4,365,816, Cl. 277-88.000.
Egbert, Gary L., to NL Industries, Inc. Drilling mud degasser. 4,365,977, Cl. 55-41.000.
Eggleston, David: *See*—
Gwilliam, Ralph D.; and Eggleston, David, 4,366,055, Cl. 210-350.000.
Egler, Mark S.: *See*—
Papanek, Thomas H.; Egler, Mark S.; and Landau, Julian I., 4,366,061, Cl. 210-647.000.
Egli, Alwin, to SIG-Schweizerische Industrie-Gesellschaft. Package assembly and method of packaging. 4,365,715, Cl. 206-524.800.
Ehrat, Arthur H. Deformation-preventing swingable mount for basketball goals. 4,365,802, Cl. 273-1.50R.
Ehrlich, Robert L., to Colgate-Palmolive Company. Article for storing and dispensing detergent compositions utilizing separate tablets of components. 4,365,853, Cl. 312-42.000.
EHV Systems, Inc.: *See*—
Santini, John, 4,366,431, Cl. 320-46.000.
Eisenmenger, Edith; Engel, Richard; Kuhner, Gerhard; Reck, Reinhold; Schaefer, Hans; and Voll, Manfred, to Deutsche Gold- und Silberscheideanstalt Vormals Roessler. Carbon black useful for pigment for black lacquers. 4,366,138, Cl. 423-445.000.
Ejiri, Koichi; Kurose, Morisumi; and Maeda, Mamoru, to Kabushiki Kaisha Ricoh. Picture transfer method and apparatus therefor. 4,366,506, Cl. 358-260.000.
Ekblad, Carl A. Electric iron stand with time delay safety switch arrangement. 4,366,366, Cl. 219-247.000.
Ekuan, Kenji, to Alfa & Associates, Inc. Cassette tape case magazine. 4,365,713, Cl. 206-387.000.
Elan Pressure Clean Limited: *See*—
Bartlett, John M., 4,365,383, Cl. 15-302.000.
Elcar Zurich AG: *See*—
Baumgartner, Carl, 4,366,525, Cl. 361-231.000.
Eldex Laboratories, Inc.: *See*—
Durrum, Emmett L., 4,365,943, Cl. 417-429.000.
Electro Corporation: *See*—
Metcalf, Wilbur F., 4,366,373, Cl. 235-92.0DM.
Elenbaas, George H. Mercury displacement relay. 4,366,458, Cl. 335-52.000.
Eli Lilly and Company: *See*—
Baltz, Richard H.; and Seno, Eugene T., 4,366,247, Cl. 435-124.000.
Canada, Emily J., 4,366,155, Cl. 424-250.000.
Clinton, Albert J., deceased; and O'Doherty, George O. P., 4,366,168, Cl. 424-283.000.
Hamill, Robert L.; and Stark, W. Max, 4,366,147, Cl. 424-117.000.
Ellis, Tony. Voltage detectors and electrical continuity checkers. 4,366,434, Cl. 324-51.000.
Elmore, Carl L.; Funk, Erwin D.; and Poulin, Ted M., to Kamyr, Inc. Apparatus for solubilizing and oxidizing of peat. 4,365,974, Cl. 48-111.000.
Elmore, Charles E.; and Harmon, David H., to Ciba-Geigy Corporation. Apparatus for making urea-formaldehyde insulation. 4,366,122, Cl. 422-133.000.
El Sayed, Aziz: *See*—
Resz, Raoul; Schaer, Walter; and El Sayed, Aziz, 4,366,288, Cl. 525-60.000.
EMI Limited: *See*—
Gillard, Richard G.; and Oliver, Colin C., 4,366,395, Cl. 307-246.000.
Emrich, Robert R. Self-driven mobile center pivot irrigation system. 4,365,748, Cl. 239-177.000.
Endo, Akira: *See*—
Tachibana, Akira; Endo, Akira; and Sekine, Kenji, 4,366,546, Cl. 364-571.000.
Endo, Takuya, to Nissan Motor Co, Ltd. Engine starting apparatus for an extremely cold climate. 4,365,606, Cl. 123-556.000.
Enertec: *See*—
Loewenstein, Paul, 4,366,474, Cl. 340-658.000.
Engel, Richard: *See*—
Eisenmenger, Edith; Engel, Richard; Kuhner, Gerhard; Reck, Reinhold; Schaefer, Hans; and Voll, Manfred, 4,366,138, Cl. 423-445.000.
Engel, Richard M.: *See*—
Feld, Paul G.; and Engel, Richard M., 4,365,493, Cl. 72-53.000.
Engelhard Corporation: *See*—
Wilkinson, Peter, 4,366,035, Cl. 204-44.000.
Engelhart, John E.; Angeles, Marshall R.; and D'Errico, Michael J., to Merck & Co., Inc. 1,2-Dibromo-2-cyano-2-(aryl)ethane(propane) antimicrobial compounds. 4,366,170, Cl. 424-304.000.
Engineering Systems Corporation: *See*—
Carlberg, David, 4,365,750, Cl. 239-276.000.
English Clay Lovering Pochin & Company: *See*—
Gwilliam, Ralph D.; and Eggleston, David, 4,366,055, Cl. 210-350.000.
Erco Industries Limited: *See*—
Cowley, Gerald, 4,366,120, Cl. 422-106.000.
Erdelyi, Miklos: *See*—
Czegledi, Bela; Csovari, Mihaly; Erdelyi, Miklos; Streker, Lajos; Toth, Istvan; Szabo nee Mogyorosi, Katalin; Riederauer, Szilard; and Szentgyorgyi, Geza, 4,366,129, Cl. 423-112.000.
Ernst Leitz Wetzlar GmbH: *See*—
Broemer, Heinz; Adam, Werner; and Hedrich, Friedhelm, 4,365,356, Cl. 3-1.900.
Wienstroth, Volker, 4,366,417, Cl. 315-296.000.
Eroterv Eromu es Halozattervezo Vallalat: *See*—
Takats, Ferenc; Lorand, Ferenc; Pajer, Imre; and Liptak, Laszlo, 4,366,095, Cl. 252-633.000.
Eschenberg, Rudolf, to Thyssen Aktiengesellschaft. Blast furnace with a refractory lining of concrete components. 4,366,258, Cl. 501-124.000.
Etablissement Salgad: *See*—
Frostig, Amos, 4,365,560, Cl. 102-477.000.
Eto, Kunihiko; Yamakage, Tetsurou; and Niwa, Kuniyuki, to Toyoda Koki Kabushiki Kaisha. Index apparatus for a rotary table. 4,366,421, Cl. 318-466.000.
Euroceltique, S.A.: *See*—
Leslie, Stewart T., 4,366,310, Cl. 536-56.000.
Euzen, Jean-Paul: *See*—
Convers, Alain; Torck, Bernard; Euzen, Jean-Paul; and Amigues, Pierre, 4,366,327, Cl. 568-697.000.
Evans, Carroll F.: *See*—
Pearlstein, Fred; and Evans, Carroll F., 4,365,481, Cl. 62-123.000.
Evans, David M., to S&C Electric Company. Anti-paralleling apparatus for high-voltage gear. 4,366,353, Cl. 200-48.00R.
Evans, John M.; Showell, Graham A.; and Fake, Charles S., to Beecham Group Limited. Anti-hypertensive chromanol derivatives. 4,366,163, Cl. 424-267.000.
Everett, Geoffrey J.; and Hunt, Christopher J., to TI Crypton Limited. Engine analyzers. 4,366,436, Cl. 324-379.000.
Everett, George S., to Quaker Oats Company, The. Catalysts and binder systems for manufacturing sand shapes. 4,366,267, Cl. 523-144.000.
Exxon Research and Engineering Co.: *See*—
DeBonte, William J.; and Lynch, Karen, 4.366,490, Cl. 346-140.00R.
Feng, Tom; and Ghosh, Amal K., 4,366,335, Cl. 136-255.000.
Metrailer, William J.; and Wiechert, Steven, 4,366,048, Cl. 208-127.000.
Williams, Rollie B.; and Nadkarni, Ramachandra A., 4,365,975, Cl. 48-197.00R.
Winter, William E.; and Chang, Bong H., 4,366,047, Cl. 208-89.000.
Ezban, Morris J. Dynamic pressure relief device for storage elevation. 4,365,730, Cl. 222-547.000.
Facet Enterprises, Inc.: *See*—
Williams, James O., 4,366,385, Cl. 290-38.00R.
Fake, Charles S.: *See*—
Evans, John M.; Showell, Graham A.; and Fake, Charles S., 4,366,163, Cl. 424-267.000.
Falconer Plate Glass Corporation: *See*—
Workens, Frank M., 4,365,584, Cl. 118-300.000.
Fan, John C. C.: *See*—
Turner, George W.; Fan, John C. C.; and Salerno, Jack P., 4,366,338, Cl. 136-258.000.
Fardal, Randolph G.: *See*—
Robinson, Edward L., Jr.; Fardal, Randolph G.; and Anderson, David, 4,365,672, Cl. 172-2.000.
Farid, Samir Y.: *See*—
Specht, Donald P.; Houle, Conrad G.; and Farid, Samir Y., 4,366,228, Cl. 430-281.000.
Farr Company: *See*—
Culbert, Robert M.; and Miller, Charles E., 4,365,980, Cl. 55-315.000.
Fassler, Fred G. Brush-like cleaning tool for cleaning grills and other structures having elongate rod-like members. 4,365,380, Cl. 15-111.000.
Faulkner, Arnold T. Tiller head with shiftable blades. 4,365,673, Cl. 172-95.000.
Faurie, Maurice: *See*—
Perrichot, Daniel; and Faurie, Maurice, 4,365,850, Cl. 308-26.000.
Fauser, Friedrich: *See*—
Knorre, Helmut; Langer, Manfred; Fauser, Friedrich; and Fischer, Willi, 4,366,049, Cl. 208-179.000.
Featherston, Robert D.: *See*—
Silano, Michael A.; and Featherston, Robert D., 4,366,275, Cl. 524-47.000.
Federal Pacific Electric Company: *See*—
Norden, Alexander R., 4,366,354, Cl. 200-154.000.
Fehling, Hans R.; and Hase, Horst, to Didier-Werke, A.G. Refractory structures. 4,365,731, Cl. 222-600.000.
Feinberg, Arthur L. Flame retardant woven fabrics. 4,365,655, Cl. 139-426.00R.
Feinleib, Morris, to Varian Associates. Cadmium sulfide/cadmium carbonate/cadmium oxide photoconductor produced by high temperature, inert atmosphere calcination. 4,366,222, Cl. 430-127.000.
Feld, Paul G.; and Engel, Richard M., to Metal Improvement Company, Inc. Shot peening apparatus. 4,365,493, Cl. 72-53.000.
Feldman, Alexandr V.: *See*—
Bai, Roland D.; Brodovsky, Vladimir N.; Ivanov, Evgeny S.; Kanep, Alexandr A.; Feldman, Alexandr V.; and Chabanov, Alim I., 4,366,428, Cl. 318-809.000.
Feldman, Neil B.: *See*—
McDermott, Mark W.; and Feldman, Neil B., 4,366,560, Cl. 365-228.000.
Feller, Otto; Oepen, Heinz; and Stechow, Jochen, to Goetze AG. Method and apparatus for the out-of-round shaping of workpieces. 4,366,543, Cl. 364-474.000.
Felpel, Glenn D. File tool attachment. 4,365,397, Cl. 29-76.00R.
Feng, Tom; and Ghosh, Amal K., to Exxon Research and Engineering Co. Indium oxide/n-silicon heterojunction solar cells. 4,366,335, Cl. 136-255.000.

Ferer, Harvey D.; and Sierralta, Luis F., to Aaron Ferer & Sons Co., Inc. Process for recovering resin from a spent commercial article. 4,366,006, Cl. 134-38.000.

Ferguson, Frederick D. Aircraft having buoyant gas balloon. 4,365,772, Cl. 244-33.000.

Ferranti Limited: *See*—
Bell, Melvyn R., 4,366,527, Cl. 361-386.000.

Fichtner, Karl-Heinz: *See*—
Andres, Helmut; Fichtner, Karl-Heinz; and Fisher, Hans-Siegfried, 4,365,851, Cl. 308-187.000.

Fiege, Helmut: *See*—
Wedemeyer, Karlfried; and Fiege, Helmut, 4,366,325, Cl. 568-432.000.

Fields, Davis S., Jr.: *See*—
Chow, William W.; and Fields, Davis S., Jr., 4,366,518, Cl. 360-121.000.

Fields, Ellis K.: *See*—
Nimry, Tayseer S.; and Fields, Ellis K., 4,366,304, Cl. 528-189.000.

Fillman, Russell L.; and Yoon, Young Z., to Woodford Manufacturing Company. Loading dock canopy. 4,365,452, Cl. 52-173.0DS.

Fingerle, Rudolf, to SKF Kuggellagerfabriken GmbH. Snap cage of plastic material for ball bearings. 4,365,852, Cl. 308-201.000.

Finke, Guenter B.; and Ma, Bao-Min, to Magnetic Metals Corporation. Differential transformer core for pulse currents. 4,366,520, Cl. 361-45.000.

Fiocchi, Giulio: *See*—
Galluzzi, Giovanni; and Fiocchi, Giulio, 4,365,555, Cl. 102-204.000.

Firestone Tire & Rubber Company, The: *See*—
Gunesin, Binnur; Hamed, Gary R.; Kang, Jung W.; and Schulz, Donald N., 4,366,291, Cl. 525-218.000.

Fischel, Halbert. Hemodialysis system. 4,366,051, Cl. 210-96.200.

Fischer, Gunter; Stemme, Otto; and Wagensonner, Eduard, to Agfa-Gevaert Aktiengesellschaft. Electrothermographic apparatus for detection and pinpointing of malignancies in human bodies. 4,366,381, Cl. 250-316.100.

Fischer, Hermann; and Schubert, Johannes M., to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Single-sheet rotary offset printing machine. 4,365,553, Cl. 101-232.000.

Fischer, Willi: *See*—
Knorre, Helmut; Langer, Manfred; Fauser, Friedrich; and Fischer, Willi, 4,366,049, Cl. 208-179.000.

Fisher, Hans-Siegfried: *See*—
Andres, Helmut; Fichtner, Karl-Heinz; and Fisher, Hans-Siegfried, 4,365,851, Cl. 308-187.000.

Fisher, Harry W.: *See*—
Ho, William W.; Hall, William F.; Fisher, Harry W.; and Perrine, Eugene B., 4,365,503, Cl. 73-3.000.

Fisher, Timothy Z. Fuel injection valve assembly for reciprocating gas engine. 4,365,756, Cl. 239-533.200.

Fitch, John L., to Mobil Oil Corporation. Tubular drill string member with contoured circumferential surface. 4,365,678, Cl. 175-323.000.

Fitzpatrick, Donald C.; Gerard, Peter A.; and Davison, John F., to Beloit Corporation. Speed compensated timing circuit for actuating a sheeter machine. 4,365,797, Cl. 271-303.000.

Fleet Industries: *See*—
Norminton, Robert S., 4,365,574, Cl. 114-243.000.

Ford Motor Company: *See*—
Veneziano, Marcello, 4,366,465, Cl. 340-52.00R.

Ford, R. Gary, to Steelcraft Corporation. Strut support apparatus. 4,365,910, Cl. 403-172.000.

Forian, Istvan: *See*—
Alajos, Dobos; Kiss, Gyula; Gaspar, Bela; Imre, Geza; Jony nee Acs, Julia; Forian, Istvan; Ijjas, Istvan; Liptak, Ferenc; and Bisits nee Zsilinszky, Vilma, 4,365,757, Cl. 239-567.000.

Formica Corporation: *See*—
McClure, George W., Jr., 4,365,547, Cl. 100-38.000.

Forster, Ewald: *See*—
Kartschmaroff, Peter; Forster, Ewald; and Schaffner, Armin, 4,366,136, Cl. 423-331.000.

Forster, Siegfried; and Friesinger, Gunter, to Kernforschungszentrum Karlsruhe GmbH. Spring elements for supporting a superconductive coil. 4,366,460, Cl. 335-216.000.

Fort Wayne Wire Die, Inc.: *See*—
Carson, Charles, 4,365,502, Cl. 72-467.000.

Foster Airdata Systems Inc.: *See*—
Foster, George B.; and Harris, David E., 4,366,578, Cl. 455-79.000.

Foster, Christopher A.: *See*—
Turnbull, Robert J.; Foster, Christopher A.; and Hendricks, Charles D., 4,366,112, Cl. 376-151.000.

Foster, George B.; and Harris, David E., to Foster Airdata Systems Inc. Transmit/receive mode protection arrangement. 4,366,578, Cl. 455-79.000.

Fot, Viktor D.: *See*—
Brounshtein, Viktor B.; Petrov, Vladimir I.; Otsup, Rudolf R.; Ignatieva, Galina P.; Kozlovsky, Vladlen V.; Lipshits, Leonard Y.; Zhuravlev, Oleg V.; Koba, Mikhail G.; Seliverstov, Konstantin B.; Igisheva, Tamara A.; Drobyazko, Petr A.; Motin, Anatoly I.; Fot, Viktor D.; Yakimov, Lev T.; and Kuznetsov, Boris G., 4,366,124, Cl. 422-278.000.

Fotland, Richard A.; and Carrish, Jeffrey J., to Dennison Manufacturing Company. Electrostatic transfer printing. 4,365,549, Cl. 101-1.000.

Foundation Equipment Company: *See*—
MacKinnon, Alan G., 4,365,675, Cl. 173-105.000.

Fowler, Dwight W. Sewer tapping apparatus. 4,365,829, Cl. 285-162.000.

Fox, Irwin, to Fox, Irwin; Samuels, Alvin; and Samuels, David. Highly reactive iron oxide agents and apparatus for hydrogen sulfide scavenging. 4,366,131, Cl. 423-231.000.

Frabotta, Dante: *See*—
Rader, Philip C.; Frabotta, Dante; and Hanson, Robert W., 4,366,133, Cl. 423-242.000.

Framatome: *See*—
Gigou, Roger, 4,366,113, Cl. 376-264.000.

Francis, Albert C., to Aerpat A.G. Method of making a mandrel for a self plugging blind rivet. 4,365,495, Cl. 72-88.000.

Francis, Leonard J.: *See*—
Hutter, Harold G.; and Francis, Leonard J., 4,365,859, Cl. 339-97.00P.

Franssen, Nico V., deceased: *See*—
Dijkmans, Eise C.; Franssen, Nico V., deceased; and De Haan, Friedrich J., administrator, 4,366,346, Cl. 179-1.00J.

Franz Plasser Bahnbaumischenen Industriellgesellschaft m.b.H.: *See*—
Theurer, Josef, 4,365,918, Cl. 409-296.000.

Freeman Chemical Corporation: *See*—
Svoboda, Glenn R., 4,366,109, Cl. 264-255.000.

Freeman, Daniel L.: *See*—
Bettencourt, Thomas S.; and Freeman, Daniel L., 4,365,463, Cl. 56-327.00R.

Freeman, Wallace L., to United States of America, Army. Method of making cold shield for infrared detector array. 4,366,229, Cl. 430-312.000.

Freeouf, John L.: *See*—
Braslau, Norman; Freeouf, John L.; Pettit, George D.; Rupprecht, Hans S.; and Woodall, Jerry M., 4,366,493, Cl. 357-4.000.

Freisler, Erhard; and Haltmeier, Paul, to Ruti Machinery Works Ltd. Apparatus for coupling a harness-motion to a harness frame of a loom. 4,365,653, Cl. 139-88.000.

Freitag, Dieter; Nouvertne, Werner; Reinking, Klaus; Tacke, Peter; Kleiner, Frank; and Schmidt, Manfred, to Bayer Aktiengesellschaft. Flame-resistant moulding materials based on thermoplastic aromatic polyesters and polyesters carbonates, a process for their production and their use in the production of moulded bodies. 4,366,276, Cl. 524-94.000.

Frey, G. Robert; Rogus, Joseph A.; Johnson, Paul R.; and King, Richard A., to Joy Manufacturing Company. Suspension system for operator compartment. 4,365,682, Cl. 180-89.130.

Frick, Nikolaus: *See*—
Weilenmann, Walter; and Frick, Nikolaus, 4,365,961, Cl. 464-36.000.

Fried. Krupp Gesellschaft mit beschrankter Haftung: *See*—
Jachowski, Johannes; and Mohs, Rudolf, 4,365,997, Cl. 148-31.000.

Friedrich, Jan B.: *See*—
Wainwright, Mark S.; Marsden, Warwich L.; and Friedrich, Jan B., 4,366,260, Cl. 518-713.000.

Friemann, Hans; Moretto, Hans-Heinrich; Alberts, Heinrich; de Montigny, Armand; and Toepsch, Hans, to Bayer Aktiengesellschaft. Coating agent for non-stick coatings. 4,366,286, Cl. 524-588.000.

Friesinger, Gunter: *See*—
Forster, Siegfried; and Friesinger, Gunter, 4,366,460, Cl. 335-216.000.

Frohberger, Paul-Ernst: *See*—
Kramer, Wolfgang; Timmler, Helmut; Buchel, Karl H.; Brandes, Wilhelm; Frohberger, Paul-Ernst; and Scheinpflug, Hans, 4,366,152, Cl. 424-245.000.

Frohnert, Heinz; and Steude, Klaus, to Veba Oel Development, Inc. Process for separating dust from distillation gases. 4,365,976, Cl. 55-4.000.

Frost, John S.: *See*—
Haines, Donald A.; Frost, John S.; and Klumpp, Rosalie J., 4,365,504, Cl. 73-3.000.

Frostig, Amos, to Etablissement Salgad. Fin-stabilized projectile. 4,365,560, Cl. 102-477.000.

Fuji Electric Co., Ltd.: *See*—
Iwanami, Masao; and Ogawa, Yusuke, 4,365,486, Cl. 62-392.000.

Fuji Jukogyo Kabushiki Kaisha: *See*—
Shikata, Makoto; Osano, Hisashi; and Morozumi, Takuro, 4,365,603, Cl. 123-440.000.

Fuji Kiko Company, Limited: *See*—
Mochida, Haruo; Tanaka, Yoshiyuki; Yamamoto, Yoshio; and Kataoka, Minoru, 4,365,488, Cl. 464-132.000.

Fuji Photo Film Co., Ltd.: *See*—
Fukushima, Osamu; and Koizumi, Takashi, 4,365,795, Cl. 271-236.000.
Hamaoka, Tsutomu; Takahashi, Osamu; Harada, Tooru; Sakai, Minoru; and Ohki, Nobutaka, 4,366,226, Cl. 430-214.000.
Ichijima, Seiji; Adachi, Keiichi; and Ogawa, Tadashi, 4,366,237, Cl. 430-505.000.
Mori, Sumio, 4,366,507, Cl. 358-283.000.
Nakamura, Kotaro, 4,366,233, Cl. 430-393.000.
Oishi, Kengo; and Suzuki, Osamu, 4,365,712, Cl. 206-387.000.
Shinagawa, Yukio; Ohtani, Sumio; Suematsu, Koichi; and Kawaguchi, Hideo, 4,366,239, Cl. 430-533.000.
Sugiyama, Masatoshi; Odawara, Hideo; and Takeda, Nagao, 4,365,998, Cl. 106-22.000.
Takahashi, Osamu, 4,366,236, Cl. 430-505.000.
Yagi, Motohiko, 4,366,253, Cl. 501-63.000.
Yokoyama, Shigeki; and Ohga, Kunihiko, 4,366,238, Cl. 430-529.000.

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Fujimoto, Masahiro: *See*—
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Fujisawa Pharmaceutical Co., Ltd.: *See*—
Takaya, Takao; Masugi, Takashi; Takasugi, Hisashi; and Kochi, Hiromu, 4,366,153, Cl. 424-246.000.
Fujita, Toshio; and Kashima, Toru, to Kiresuto Kagaku Kabushiki Kaisha; and Osaka Semento Kabushiki Kaisha. Corrosion-inhibiting method for steel materials in concrete. 4,365,999, Cl. 106-90.000.
Fujitsu Fanuc Limited: *See*—
Imazeki, Ryoji; and Hattori, Masayuki, 4,366,433, Cl. 323-281.000.
Inaba, Hajimu; and Sakakibara, Shinsuke, 4,366,423, Cl. 318-563.000.
Kishi, Hajimu; and Tanaka, Kunio, 4,366,475, Cl. 340-731.000.
Fujitsu Limited: *See*—
Asami, Fumitaka, 4,366,398, Cl. 307-451.000.
Ueno, Norio; Kato, Seiji; and Iwata, Atsushi, 4,366,456, Cl. 333-173.000.
Watanabe, Kouji; and Tokudome, Hiroshi, 4,365,857, Cl. 339-17.00C.
Fujiwara, Ken-ichi: *See*—
Takatsuki, Toshiharu; Fujiwara, Ken-ichi; Nomura, Jutaro; and Okamura, Shigeru, 4,366,347, Cl. 179-2.0DP.
Takatsuki, Toshiharu; Fujiwara, Ken-ichi; Yanagisawa, Sinobu; and Okamura, Shigeru, 4,366,572, Cl. 375-37.000.
Fukuoka, Norio: *See*—
Sato, Masaaki; Miyaji, Kazumi; Yoshida, Masahide; Fukuoka, Norio; Nakasho, Kazuo; and Furuta, Kenji, 4,366,514, Cl. 360-74.400.
Fukushima, Osamu; and Koizumi, Takashi, to Fuji Photo Film Co., Ltd. Sheet orthogonal-conveying method and device. 4,365,795, Cl. 271-236.000.
Fukuzawa, Tadashi; Nakamura, Michiharu; and Takahashi, Susumu, to Hitachi, Ltd. Semiconductor laser device. 4,366,567, Cl. 372-38.000.
Funk, Erwin D.: *See*—
Elmore, Carl L.; Funk, Erwin D.; and Poulin, Ted M., 4,365,974, Cl. 48-111.000.
Furuhashi, Toshio: *See*—
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Furuhata, Takashi, to Hitachi, Ltd. Frequency discrimination circuit. 4,366,399, Cl. 307-519.000.
Furukawa, Masanori: *See*—
Amemiya, Akira; Kunii, Tadashi; Furusawa, Tomotaka; Takeda, Mutsuhiko; Tanaka, Katsumasa; Umemura, Toshikazu; Ono, Yoshihiro; Masumoto, Isamu; Nakao, Noriyasu; and Furukawa, Masanori, 4,366,305, Cl. 528-230.000.
Furusawa, Tomotaka: *See*—
Amemiya, Akira; Kunii, Tadashi; Furusawa, Tomotaka; Takeda, Mutsuhiko; Tanaka, Katsumasa; Umemura, Toshikazu; Ono, Yoshihiro; Masumoto, Isamu; Nakao, Noriyasu; and Furukawa, Masanori, 4,366,305, Cl. 528-230.000.
Furuta, Kenji: *See*—
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Futawatari, Hajime: *See*—
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Fuzesi, Stephen; and Bayusik, John G., to Olin Corporation. Starch-amine-based polyether polyols and polyurethane foams prepared therefrom. 4,366,265, Cl. 521-167.000.
Gabriel, William, to Western Electric Company, Inc. Immersion curing of encapsulating material. 4,366,187, Cl. 427-96.000.
Gaetani, Quintino; and Papantoniou, Christos, to Societe Anonyme dite: L'Oreal. Process for treating cosmetic oils so as to modify their properties and cosmetic compositions containing these oils. 4,366,099, Cl. 260-407.000.
GAF Corporation: *See*—
Resnick, Bruce M., 4,366,171, Cl. 424-313.000.
Williams, Earl P.; and Lorenz, Donald H., 4,366,294, Cl. 525-327.600.
Gallien, Shelby W.: *See*—
Graham, J. Clifford; Gallien, Shelby W.; and Gill, Maurice P., 4,365,988, Cl. 71-34.000.
Galluzzi, Fabrizio: *See*—
Alessandrini, Paolo; De Angelis, Lucio; Galluzzi, Fabrizio; Losciale, Francesco; and Scafe', Ernesto, 4,366,337, Cl. 136-258.000.
Galluzzi, Giovanni; and Fiocchi, Giulio, to BERFI S.p.A. Explosive priming device. 4,365,555, Cl. 102-204.000.
Galzy, Pierre: *See*—
Jallageas, Jean C.; Arnaud, Alain; and Galzy, Pierre, 4,366,250, Cl. 435-280.000.
Gang-Nail Systems, Inc.: *See*—
Harris, Roderick E., 4,365,734, Cl. 227-152.000.
Ganguly, Ashit K.; Liu, Yi-Tsung; Sarre, Olga; Jaret, Robert; and Schumacher, Doris P., to Schering Corporation. Derivatives of antibiotic AR-5 components. 4,366,309, Cl. 536-7.100.
Gardner Bender, Inc.: *See*—
Kruse, Robert W., 4,365,527, Cl. 81-431.000.
Gardner, Harry E., to Union Carbide Corporation. Removal of molybdenum from uranium solutions. 4,366,126, Cl. 423-7.000.
Gaspar, Bela: *See*—
Alajos, Dobos; Kiss, Gyula; Gaspar, Bela; Imre, Geza; Jony nee Acs, Julia; Forian, Istvan; Ijjas, Istvan; Liptak, Ferenc; and Bisits nee Zsilinszky, Vilma, 4,365,757, Cl. 239-567.000.
Gates Rubber Company, The: *See*—
Russ, Paul E., Sr., 4,365,965, Cl. 474-244.000.
Gaughan, Edmund J., to Stauffer Chemical Company. Sulfonylurea herbicidal antidotes. 4,365,990, Cl. 71-100.000.
Gaylord, John A.; and Marks, Kenneth A., to H. Koch & Sons, Div. of Gulf & Western Mfg. Co. Double safety manually releasable strap connector. 4,365,776, Cl. 244-151.00A.
Geary, John T.: *See*—
Gounder, Raj N.; and Geary, John T., 4,366,302, Cl. 528-99.000.
Gebhardt, Ulrich: *See*—
Richter, Gerhard; Luft, Gunter; and Gebhardt, Ulrich, 4,366,033, Cl. 204-1.00T.
Gebke, Klaus: *See*—
Kuhnel, Roland; Bokelmann, Rainer; Scholz, Magnus; Gebke, Klaus; and Schuler, Mariana, 4,366,114, Cl. 376-272.000.
Gee, Kenneth H., to Bethlehem Steel Corporation. Mineral wool and process for producing same. 4,365,984, Cl. 65-2.000.
Geiger, Willard L., to Modern Industries Signal Equipment, Inc. Train approach detector. 4,365,777, Cl. 246-130.000.
Genentech, Inc.: *See*—
Riggs, Arthur D., 4,366,246, Cl. 435-68.000.
General Dynamics, Pomona Division: *See*—
Hagedon, Gary L.; and Brustad, John T., 4,366,483, Cl. 343-113.00R.
General Electric Company: *See*—
Anthony, Blair T., 4,366,207, Cl. 428-412.000.
Brandt, Richard T., 4,366,577, Cl. 378-194.000.
Hickin, Charles W. R., 4,366,476, Cl. 340-747.000.
Krabbenhoft, Herman O., 4,366,089, Cl. 252-437.000.
Smith, Lowell S.; and Brisken, Axel F., 4,366,406, Cl. 310-334.000.
Walker, Loren H.; and Cutler, John H., 4,366,427, Cl. 318-798.000.
Webb, William M., 4,365,562, Cl. 108-108.000.
Zdaniewski, Joseph J.; Penn, William B.; and Balke, Roy L., 4,365,407, Cl. 29-598.000.
General Foods, Inc.: *See*—
Cameron, Jacquelyn J.; and Myers, Chester D., 4,366,097, Cl. 260-123.500.
General Motors Corporation: *See*—
Berg, Alan D., 4,365,838, Cl. 297-379.000.
Dickman, John E.; and Donley, William B., 4,365,405, Cl. 29-571.000.
Karadsheh, Sam M.; and Radomski, Thomas A., 4,366,531, Cl. 363-57.000.
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Genoni, Fausto: *See*—
Le Van Mao, Raymond; Pilati, Orlando; Moretti, Enrico; Covini, Romano; and Genoni, Fausto, 4,366,135, Cl. 423-329.000.
Georgia Tech Research Institute: *See*—
Dittman, William J.; and Jameson, Calvin R., 4,366,452, Cl. 333-108.000.
Gerard, Peter A.: *See*—
Fitzpatrick, Donald C.; Gerard, Peter A.; and Davison, John F., 4,365,797, Cl. 271-303.000.
Gewerkschaft Schalker Eisenhutte: *See*—
Gregor, Karl; and Asmus, Kurt, 4,366,004, Cl. 134-22.110.
Ghommidh, Josette; Buttazzoni, Bernard; Constant, Georges; Diloy, Etienne; and Morancho, Roland, to Societe Europeene de Propulsion. Process for making bioactive coatings on osseous prostheses, and prostheses thus obtained. 4,366,183, Cl. 427-2.000.
Ghosh, Amal K.: *See*—
Feng, Tom; and Ghosh, Amal K., 4,356,335, Cl. 136-255.000.
Giandonato, Giuseppe: *See*—
Cedolin, Riccardo; Chiarottino, Wolmer; Giandonato, Giuseppe; Giorcelli, Silvano; Martinengo, Giorgio; Sofi, Giorgio; and Villone, Sergio, 4,366,535, Cl. 364-200.000.
Gibson, Ronald F.: *See*—
Greer, Raymond T.; and Gibson, Ronald F., 4,365,741, Cl. 494-37.000.
Gibson, Thomas W., to Procter & Gamble Company, The. Synthesis of long-chain alkanes having terminal functionality. 4,366,101, Cl. 260-429.300.
Gigou, Roger, to Framatome. Installation for a nuclear power station with staggered swimming pools. 4,366,113, Cl. 376-264.000.
Giguere, R. James, to Cereal Enterprisess, Inc. Apparatus for degerminating a kernel by compressing the edges of the kernel. 4,365,546, Cl. 99-567.000.
Gilbertson, Terry J., to Upjohn Company, The. 4-Substituted phenyl-1,2,4-triazoline-3,5-diones and their dihydro analogs as analytical reagents. 4,366,320, Cl. 548-264.000.
Gill, Maurice P.: *See*—
Graham, J. Clifford; Gallien, Shelby W.; and Gill, Maurice P., 4,365,988, Cl. 71-34.000.
Gillard, Richard G.; and Oliver, Colin C., to EMI Limited. Circuit for controlling the grid potential of a pulsed X-ray tube. 4,366,395, Cl. 307-246.000.
Ginsberg, Martin: *See*—
Janak, Miloslav; Schonwald, Helmut; Tercic, Eduard; and Ginsberg, Martin, 4,366,512, Cl. 360-48.000.
Ginsburg, Arthur P. Spatial frequency and contrast sensitivity test chart. 4,365,873, Cl. 351-239.000.

Giorcelli, Silvano: *See*—
Cedolin, Riccardo; Chiarottino, Wolmer; Giandonato, Giuseppe; Giorcelli, Silvano; Martinengo, Giorgio; Sofi, Giorgio; and Villone, Sergio, 4,366,535, Cl. 364-200.000.

Girtz, Sylvester A. Manhole cover lifter. 4,365,925, Cl. 414-684.300.

Gist-Brocades N.V.: *See*—
Bruynes, Cornelis A.; and Jurriens, Theodorus K., 4,366,315, Cl. 544-16.000.

Gistinger, Guido; and Schmid, Manfred, to Sigri Elektrographit GmbH. Method of increasing the strength of carbon and graphite members. 4,366,191, Cl. 427-228.000.

GK Technologies, Incorporated, General Cable Company Division: *See*—
Bahder, George; Katz, Carlos; Dima, Attila F.; and Knott, Adolf S., 4,365,947, Cl. 425-384.000.

Glaenzer Spicer: *See*—
Orain, Michel A., 4,365,686, Cl. 180-256.000.
Orain, Michel A.; and Thiault, Roger P., 4,365,791, Cl. 267-166.000.

Glancy, Jerry L., to Boeing Company, The. Cowl structure alignment and shear device. 4,365,775, Cl. 244-53.00R.

Glavin, German G.: *See*—
Karpov, Jury A.; Burylev, Boris P.; Glavin, German G.; Kvin, Valeria E.; Kovalev, Vasily V.; Natanson, Konstantin J.; Orlov, Vladimir V.; Kuznetsov, Lev B.; Zaitsev, Anatoly M.; Kartsev, Valentin E.; Morozov, Vladimir M.; and Kovalev, Gennady G., 4,365,969, Cl. 436-75.000.

Glaxo Group Limited: *See*—
Clitherow, John W.; Price, Barry; Bradshaw, John; and Martin-Smith, Michael, 4,366,164, Cl. 424-267.000.

Godwin, Jerry L., to Kennecott Corporation. Multiple discharge chute. 4,365,698, Cl. 193-2.00B.

Goetze AG: *See*—
Feller, Otto; Oepen, Heinz; and Stechow, Jochen, 4,366,543, Cl. 364-474.000.

Golden, Leonard W., Jr., to Owens-Illinois, Inc. Method and apparatus for producing a plastic sleeve. 4,366,016, Cl. 156-218.000.

Golding, Gordon R.; and Boaggio, Richard J. Method and apparatus for removal and recovery of oil. 4,366,067, Cl. 210-671.000.

Goldreyer, Bruce N., to Applied Cardiac Electrophysiology. Catheter, cardiac pacemaker and method of pacing. 4,365,639, Cl. 128-786.000.

Golemo, Stanley M., Jr.; and Izbicki, Anthony J., to Hood and Co., Inc. Corrosion resistant thermostat metal compositions. 4,366,210, Cl. 428-617.000.

Golman, Lev D.: *See*—
Kurovich, Arkady N.; Krasnokutsky, Jury B.; Sysoev, Vyacheslav N.; Golman, Lev D.; Zuev, Vladimir T.; Nesterov, Viktor I.; and Laboda, Viktor A., 4,365,494, Cl. 72-63.000.

Golub, Lorne M.; and Kaslick, Ralph S., to Research Foundation of State Univ. of NY. In vivo method of determining leucocyte migratory activity levels. 4,366,144, Cl. 424-9.000.

Goodman, Lawrence A.; and Smith, Kenneth P., to RCA Corporation. Vertical MOSFET with reduced turn-on resistance. 4,366,495, Cl. 357-23.000.

Goodyear Tire & Rubber Company, The: *See*—
Parker, Dane K., 4,366,331, Cl. 568-785.000.

Gordon, Ambrose L., Jr.; and Busker, Leroy H., to Beloit Corporation. Suction press roll. 4,366,025, Cl. 162-358.000.

Gore, William C., to Illinois Tool Works Inc. Wire terminal. 4,365,861, Cl. 339-202.000.

Gotchel, Joel P., to Scott Paper Company. Controlled curing of air-permeable bonded webs. 4,365,425, Cl. 34-54.000.

Goto, Koichi: *See*—
Watanabe, Kenichi; Kinoshita, Hiroshi; Tatsumi, Akira; and Goto, Koichi, 4,365,542, Cl. 98-40.00V.

Gotoh, Akio, to Katoh Electrical Machinery Co. Ltd. Hinge clamp. 4,365,385, Cl. 16-382.000.

Gottsmann, Helmut; and Theilen, Rolf, to Triumph Adler, A.G. Printing plane adjusting mechanism. 4,365,900, Cl. 400-57.000.

Gottstein, Dietrich; and Nitschke, Christian. Force measuring device. 4,365,680, Cl. 177-212.000.

Gould Inc.: *See*—
Tawfik, Randa, 4,366,461, Cl. 337-159.000.
Zaghi, Hooshmand, 4,365,520, Cl. 73-862.630.

Gounder, Raj N.; and Geary, John T., to Lord Corporation. Imide-anhydrides and epoxy resin systems containing such compounds. 4,366,302, Cl. 528-99.000.

Graham, Clarence O., Jr.; Shepard, Charles L.; and Kullman, Russell M. H., to United States of America, Agriculture. Apparatus to uniformly control wrapping a filament around the surface of a spun core yarn during ring spinning. 4,365,464, Cl. 57-12.000.

Graham, J. Clifford; Gallien, Shelby W.; and Gill, Maurice P., to 3G Corporation. Fluid-mixing apparatus and method. 4,365,988, Cl. 71-34.000.

Grant, Valbory: *See*—
Hall, Bradley G.; Hall, Gwendolyn L.; and Grant, Valbory, 4,365,828, Cl. 280-825.000.

Grasse, Palmer. Lubricant pumping eccentric in floor stripping machine. 4,365,842, Cl. 299-37.000.

Grasse, Palmer. Blade holder in oscillated head for floor stripping machine. 4,365,843, Cl. 299-37.000.

Gray, George W.; Lacey, David; Jenner, John A.; and Pellatt, Martin G., to BCH Chemicals Limited; and United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Intermediates useful in the production of liquid crystal compounds. 4,366,330, Cl. 568-775.000.

Green, Ralph E.: *See*—
Wills, David R.; Green, Ralph E.; and Landymore, Barry W., 4,365,591, Cl. 119-82.000.

Greer, Raymond T.; and Gibson, Ronald F., to Iowa State University Research Foundation, Inc. Continuous centrifugal separation of coal from sulfur compounds and mineral impurities. 4,365,741, Cl. 494-37.000.

Gregor, Karl; and Asmus, Kurt, to Gewerkschaft Schalker Eisenhutte. Method of internally cleaning coke chamber risers. 4,366,004, Cl. 134-22.110.

Gregorian, Razmic S.; Namboodri, Chettoor G.; and Johnson, John D., to United Merchants & Manufacturers, Inc. Method of treating textile materials. 4,365,968, Cl. 8-477.000.

Greier, Josef: *See*—
Obermayer, Bertram; Skatsche, Othmar; and Greier, Josef, 4,365,594, Cl. 123-41.82R.

Gresch, Heinz: *See*—
Holter, Heinz; Gresch, Heinz; Igelbuscher, Heinrich; Dewert, Heribert; Dzikowski, Berthold; and Twiehaus, Hans-Jurgen, 4,366,132, Cl. 423-242.000.

Grilli, Walter; Crotti, Aldo; and Barchetti, Giuseppe, to Italtractor I.T.M. S.p.A. Connection link for endless chains of tracked equipment. 4,365,848, Cl. 305-54.000.

Grodin, Bessie: *See*—
Grodin, Jack; and Grodin, Bessie, 4,365,375, Cl. 15-1.700.

Grodin, Jack; and Grodin, Bessie. Vacuum nozzle for pool cleaning. 4,365,375, Cl. 15-1.700.

Grosjean, Pierre, to Rhone-Poulenc-Textile. Decorative textile element. 4,366,199, Cl. 428-114.000.

Gross, Ralph C., to Hunterdon Occupational Training Center. Method and apparatus for producing intramural wax seals between the compartments of multimedia tubes. 4,366,018, Cl. 156-273.900.

Grothe, Wolfgang. Check valve. 4,365,648, Cl. 137-539.000.

Grover, Robert R. Friction space heater. 4,365,614, Cl. 126-247.000.

Gruaz, Eric. Munition round for firearms. 4,365,559, Cl. 102-439.000.

Grumman Aerospace Corporation: *See*—
Lijoi, Bruno; Cirrito, Vincent; and Edelstein, Fred, 4,366,526, Cl. 361-385.000.

Grunberg, Wolf-Diethard: *See*—
Imhof, Rainer; Grunberg, Wolf-Diethard; and Unkelbach, Karl-Heinz, 4,365,510, Cl. 73-313.000.

Grundler, Bruno, to SIG - Schweizerische Industrie-Gesellschaft. Apparatus for producing bag packages. 4,365,459, Cl. 53-552.000.

GTE Laboratories Incorporated: *See*—
Buhrer, Carl F., 4,366,410, Cl. 313-221.000.

GTE Products Corporation: *See*—
Cole, David B., 4,366,528, Cl. 361-429.000.
Martin, Brice E.; and Schwartz, Alan R., 4,366,141, Cl. 423-561.00B.

Guerguerian, Rhual L., to Dominion Engineering Works Limited. Discharge zone fastening assembly for grinding mill. 4,365,763, Cl. 241-70.000.

Guittard, Pierre: *See*—
Jarry, Philippe; Guittard, Pierre; and Ducarre, Alphonse, 4,366,009, Cl. 148-171.000.

Gulf Research & Development Company: *See*—
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Gunesin, Binnur; Hamed, Gary R.; Kang, Jung W.; and Schulz, Donald N., to Firestone Tire & Rubber Company, The. Thermally reversible copolymers and process for the preparation thereof. 4,366,291, Cl. 525-218.000.

Guth, Christian; and Binz, Jorg, to Ciba-Geigy Corporation. Method of treating, especially dyeing, whitening or finishing, textile fabrics. 4,365,967, Cl. 8-477.000.

Guttler, Hermann: *See*—
Muller, Heinz; Hartmannsgruber, Max; and Guttler, Hermann, 4,365,465, Cl. 57-84.000.

Gwilliam, Ralph D.; and Eggleston, David, to English Clay Lovering Pochin & Company. Pressure filters. 4,366,055, Cl. 210-350.000.

H. B. Fuller Company: *See*—
Todd, Mike J.; and Lee, Jeffrey A., 4,365,377, Cl. 15-98.000.

H. Koch & Sons, Div. of Gulf & Western Mfg. Co.: *See*—
Gaylord, John A.; and Marks, Kenneth A., 4,365,776, Cl. 244-151.00A.

Habata, Kiichi; Ichikawa, Kesazi; and Shimizu, Mutsuo, to Shin-Etsu Chemical Co. Ltd. Process for concurrent preparation of organosiloxanes and methyl chloride. 4,366,324, Cl. 556-460.000.

Habermeier, Jurgen: *See*—
Urech, Karl; Habermeier, Jurgen; and Moser, Roland, 4,366,108, Cl. 264-137.000.

Hagedon, Gary L.; and Brustad, John T., to General Dynamics, Pomona Division. Receiver and method for use with a four-arm spiral antenna. 4,366,483, Cl. 343-113.00R.

Hagen, Karl; Scholl, Karl H.; and Schmelzer, Gerhard, to BASF Aktiengesellschaft. Apparatus for heating sheet-like thermoplastic preshapes. 4,366,369, Cl. 219-388.000.

Haggar Company: *See*—
Off, Joseph W. A.; and Early, Judson H., 4,365,355, Cl. 2-247.000.

Hagiwara, Sumio: *See*—
Tsukagoshi, Tsunehiro; Yokozeki, Shinichi; Hagiwara, Sumio; Uchidoi, Masataka; Yoshino, Toshikazu; and Arai, Yasuyuki, 4,366,205, Cl. 428-338.000.

Haines, Donald A.; Frost, John S.; and Klumpp, Rosalie J., to United States of America, Agriculture. Method and apparatus for field testing of anemometers. 4,365,504, Cl. 73-3.000.

Hall, Bradley G.; Hall, Gwendolyn L.; and Grant, Valbory. Skate guard. 4,365,828, Cl. 280-825.000.
Hall, Gwendolyn L.: *See*—
Hall, Bradley G.; Hall, Gwendolyn L.; and Grant, Valbory, 4,365,828, Cl. 280-825.000.
Hall, Wilbur S., to Amchem Products, Inc. Formation of polymeric coatings. 4,366,195, Cl. 427-435.000.
Hall, William F.: *See*—
Ho, William W.; Hall, William F.; Fisher, Harry W.; and Perrine, Eugene B., 4,365,503, Cl. 73-3.000.
Halliburton Company: *See*—
McLaughlin, Homer C., 4,365,670, Cl. 166-295.000.
McLaughlin, Homer C.; and Weaver, Jimmie D., 4,366,071, Cl. 252-8.55R.
McLaughlin, Homer C.; and Weaver, Jimmie D., 4,366,072, Cl. 252-8.55R.
McLaughlin, Homer C.; and Weaver, Jimmie D., 4,366,073, Cl. 252-8.55R.
McLaughlin, Homer C.; and Weaver, Jimmie D., 4,366,074, Cl. 252-8.55R.
Halloran, John D., to Joy Manufacturing Company. Hydrodynamic shaft bearing with concentric outer hydrostatic squeeze film bearing. 4,365,849, Cl. 308-9.000.
Haltmeier, Paul: *See*—
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Halwes, Dennis R., to Textron, Inc. Inplane nodalization system. 4,365,771, Cl. 244-17.270.
Hamada, Hideo: *See*—
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Hamada, Mitsuo; and Yasuda, Sadami, to Toray Silicone Co., Ltd. Flame retardant silicone rubber compositions containing carboxamides. 4,366,278, Cl. 524-210.000.
Hamajima, Shigemitsu: *See*—
Kawai, Taneichi; Nishida, Koji; Miyake, Osamu; and Hamajima, Shigemitsu, 4,365,565, Cl. 112-103.000.
Hamaoka, Tsutomu; Takahashi, Osamu; Harada, Tooru; Sakai, Minoru; and Ohki, Nobutaka, to Fuji Photo Film Co., Ltd. Color photographic sensitive material with sulfonamidophenol scavenger. 4,366,226, Cl. 430-214.000.
Hamashima, Yoshio: *See*—
Yoshioka, Mitsuru; Uyeo, Shoichiro; Hamashima, Yoshio; Kikkawa, Ikuo; Tsuji, Teruji; and Nagata, Wataru, 4,366,316, Cl. 544-90.000.
Hamed, Gary R.: *See*—
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Hamill, Robert L.; and Stark, W. Max, to Eli Lilly and Company. Antibiotic A-7413 and process for preparation thereof. 4,366,147, Cl. 424-117.000.
Handel, Gene M.: *See*—
Bertelsen, Corey A.; and Handel, Gene M., 4,366,046, Cl. 208-11.00R.
Hanlon, Charles M.; Mein, James H.; and Schultz, William J., to Masonite Corporation. Building wall panels and method of making the same. 4,366,197, Cl. 428-43.000.
Hans, Waldemar: *See*—
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Hanson, George C.: *See*—
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Hanson, Robert W.: *See*—
Rader, Philip C.; Frabotta, Dante; and Hanson, Robert W., 4,366,133, Cl. 423-242.000.
Hanson, Thomas F. Magnus air turbine system. 4,366,386, Cl. 290-44.000.
Hara, Kiyoshi: *See*—
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Harada, Fumio: *See*—
Hatada, Toshio; Senshu, Takao; Arai, Akira; Harada, Fumio; Matsuzaki, Atsushi; Futawatari, Hajime; Imaizumi, Yutaka; and Takeda, Sumiyoshi, 4,365,667, Cl. 165-152.000.
Harada, Shinichi: *See*—
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Harada, Tooru: *See*—
Hamaoka, Tsutomu; Takahashi, Osamu; Harada, Tooru; Sakai, Minoru; and Ohki, Nobutaka, 4,366,226, Cl. 430-214.000.
Haraguchi, Keisuke: *See*—
Takaoka, Yukio; Haraguchi, Keisuke; and Yamaka, Shiyouichi, 4,365,883, Cl. 354-152.000.
Harding, Curtis F.; and Simmons, Harold C., to Parker-Hannifin Corporation. Boundary layer prefilmer airblast nozzle. 4,365,753, Cl. 239-404.000.
Hareng, Michel; and Le Berre, Serge, to Thomson-CSF. Large-screen visualization device. 4,365,869, Cl. 350-345.000.
Harford, Jack R., to RCA Corporation. Television intermediate frequency amplifier. 4,366,443, Cl. 330-254.000.
Harmand, Pierre. Work-holding device. 4,365,917, Cl. 409-201.000.
Harmon, David H.: *See*—
Elmore, Charles E.; and Harmon, David H., 4,366,122, Cl. 422-133.000.
Harris Corporation: *See*—
Kubert, Vincent T., 4,365,552, Cl. 101-218.000.
Schwarz, Helmut, 4,366,453, Cl. 333-117.000.
Harris, David E.: *See*—
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Harris, Hervie L.: *See*—
Pert, James H.; Unger, Peter; Harris, Hervie L.; and Pert, James C., 4,365,629, Cl. 128-214.00D.
Harris, Roderick E., to Gang-Nail Systems, Inc. Splicing machine and method. 4,365,734, Cl. 227-152.000.
Harrison, William H., to Donald L. Morton & Associates. Multiple plate resonant electrode. 4,365,622, Cl. 128-1.300.
Harry, Ieuan L.; Krihsnakumar, Suppayan M.; Jolly, Walter R.; and Beck, Martin H., to Continental Group, Inc., The. Blow molding clamp assembly. 4,365,950, Cl. 425-534.000.
Hartmann, Franz; and Krohn, Manfred, to Nordischer Machinenbau Rud. Baader. Method and apparatus for filleting fish. 4,365,387, Cl. 17-52.000.
Hartmann, Herbert: *See*—
Schopper, Bernd; Tandler, Peter; Hartmann, Herbert; and Reuter, Manfred, 4,365,846, Cl. 303-56.000.
Hartmannsgruber, Max: *See*—
Muller, Heinz; Hartmannsgruber, Max; and Guttler, Hermann, 4,365,465, Cl. 57-84.000.
Hartwell Corporation: *See*—
Bourne, William R., 4,365,831, Cl. 292-229.000.
Hase, Horst: *See*—
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Hashima, Akiyoshi: *See*—
Baba, Masaharu; Honda, Kiyokazu; and Hashima, Akiyoshi, 4,365,396, Cl. 29-25.130.
Hasse, Peter; Wiesinger, Johannes; and Pivit, Erich, to AEG-Telefunken Aktiengesellschaft. Arrester with spark gap. 4,366,523, Cl. 361-120.000.
Hata, Shun-ichi: *See*—
Mori, Takashi; Takaku, Sakae; Matsuura, Fumiaki; Murakami, Yasushi; Noda, Yukifumi; Yamazaki, Tamotsu; Neichi, Tomohiro; Nakakimura, Hiroshi; Kataoka, Shigeyuki; Matsuno, Takashi; Hata, Shun-ichi; and Takanashi, Shigeru, 4,366,161, Cl. 424-266.000.
Hatada, Toshio; Senshu, Takao; Arai, Akira; Harada, Fumio; Matsuzaki, Atsushi; Futawatari, Hajime; Imaizumi, Yutaka; and Takeda, Sumiyoshi, to Hitachi, Ltd. Heat exchanger. 4,365,667, Cl. 165-152.000.
Hatayama, Shigeharu; Yamauchi, Masaaki; and Ikeda, Mamoru, to Hitachi, Ltd. Electrode of color picture tube electron gun and method for manufacture thereof. 4,366,414, Cl. 313-409.000.
Hatch, Seymour A., to Chicago Rawhide Manufacturing Company. Laminated elastomeric bearing unit. 4,365,936, Cl. 416-134.00A.
Hattori, Masayuki: *See*—
Imazeki, Ryoji; and Hattori, Masayuki, 4,366,433, Cl. 323-281.000.
Haubrich, Lothar; and Durr, Heinrich, to U.S. Philips Corporation. Matrix printer with automatic printing head adjustment. 4,365,901, Cl. 400-124.000.
Hauffe, William L.; and Daghe, Joseph L., to Mueller Co. Single and multiple section pipe repair clamps. 4,365,393, Cl. 24-279.000.
Hauni-Werke Korber & Co. KG: *See*—
Tolasch, Gerhard; Base, Horst; and Bantien, Jurgen, 4,365,702, Cl. 198-347.000.
Haus, Ralph A.: *See*—
Bates, Bobbie D.; and Haus, Ralph A., 4,365,779, Cl. 248-371.000.
Haut, Stephen A.; and Comes, Roger A., to Philip Morris Incorporated. Process for synthesis of N-(hydrocarbyl)substituted-p-menthane-3-carboxamide. 4,366,317, Cl. 544-336.000.
Hay, Hugh W.; and Hay, John L. Martial arts striker device. 4,365,800, Cl. 272-76.000.
Hay, John L.: *See*—
Hay, Hugh W.; and Hay, John L., 4,365,800, Cl. 272-76.000.
Hayakawa Rubber Company Limited: *See*—
Ishido, Yoshinobu; and Tanaka, Hideo, 4,366,284, Cl. 524-447.000.
Hayashi, Hideki: *See*—
Kohata, Masakazu; Hayashi, Hideki; and Miyashita, Ichiro, 4,366,533, Cl. 363-136.000.
Hayashi, Hiroyuki: *See*—
Watanabe, Yuji; and Hayashi, Hiroyuki, 4,366,510, Cl. 360-10.200.
Hazama, Kiyoaki; Shiozawa, Kazuo; and Matsumoto, Koichi, to Konishiroku Photo Industry Co., Ltd. Photographic camera with timepiece. 4,365,881, Cl. 354-76.000.
Hazelrigg, Mark J., Jr.: *See*—
Caldwell, Donald L.; and Hazelrigg, Mark J., Jr., 4,366,042, Cl. 204-290.00F.
Heath, Allan B.: *See*—
Levine, Walter E.; and Heath, Allan B., 4,365,754, Cl. 239-412.000.
Heckethorn, John E., to Heckethorn Manufacturing Company. Gastight exhaust clamp for tubing slip-joints. 4,365,392, Cl. 24-256.000.
Heckethorn Manufacturing Company: *See*—
Heckethorn, John E., 4,365,392, Cl. 24-256.000.
Hedbergska Stiftelsen: *See*—
Pert, James H.; Unger, Peter; Harris, Hervie L.; and Pert, James C., 4,365,629, Cl. 128-214.00D.
Hedrich, Friedhelm: *See*—
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Heinrich, Edgar W. Float module combination. 4,365,577, Cl. 114-267.000.

Heliotronic Forschungs-und Entwicklungsgesellschaft fur Solarzellen-Grundstoffe mbH: *See*—
Ast, Gerhard; Dietl, Josef; Helmreich, Dieter; Miller, Hans-Dieter; and Sirtl, Erhard, 4,366,024, Cl. 156-607.000.
Heller, Andrew R.; and Worley, William S., Jr., to International Business Machines Corp. Authorization mechanism for transfer of program control or data between different address spaces having different storage protect keys. 4,366,537, Cl. 364-200.000.
Helmreich, Dieter: *See*—
Ast, Gerhard; Dietl, Josef; Helmreich, Dieter; Miller, Hans-Dieter; and Sirtl, Erhard, 4,366,024, Cl. 156-607.000.
Henderson, Elmer L.; and Inacker, Henry F., to RCA Corporation. Feedback linearization of cascode amplifier configurations. 4,366,446, Cl. 330-260.000.
Hendricks, Charles D.: *See*—
Turnbull, Robert J.; Foster, Christopher A.; and Hendricks, Charles D., 4,366,112, Cl. 376-151.000.
Henkenjohann, Johann: *See*—
Henkenjohann, Johann-Georg, 4,365,660, Cl. 160-133.000.
Henkenjohann, Johann-Georg, to Henkenjohann, Johann. Roller blind. 4,365,660, Cl. 160-133.000.
Hennrich, Norbert: *See*—
Neumann, Siegfried; Hennrich, Norbert; Orth, Hans-Dieter; Pfleiderer, Gerhard; Jockers-Wretou, Evangelista; and Pauly, Hans, 4,366,242, Cl. 435-7.000.
Herman, John T.: *See*—
Dudrey, Denis J.; Herman, John T.; Wolde-Michael, Girma; and Radeztsky, Delmer L., 4,366,069, Cl. 210-788.000.
Hermann Berstorff Maschinenbau GmbH: *See*—
Anders, Dietmar, 4,365,946, Cl. 425-144.000.
Hermann, Ferdinand: *See*—
Biedermann, Horst H.; Hermann, Ferdinand; Pechinger, Ernst; and Sereinigg, Emil L. F., 4,365,902, Cl. 400-124.000.
Herr, Roy W.: *See*—
Lash, Ronald J.; and Herr, Roy W., 4,366,036, Cl. 204-55.00R.
Herskowitz, Gerald J. Local area network optical fiber data communication. 4,366,565, Cl. 370-1.000.
Hewlett-Packard Company: *See*—
Spangler, Richard M.; Burmeister, Eugene V.; Cada, Frank E.; Covington, Wayne F.; Christopher, Chris J.; Judd, Myles A.; Wenninger, Freddie W.; Watson, Robert E.; and Simcoe, Kent W., 4,366,553, Cl. 364-900.000.
Hi-G Incorporated: *See*—
Vitola, Jack J., 4,366,459, Cl. 335-79.000.
Hibi, Kunio: *See*—
Kakitani, Yohtaro; Kaneko, Tamaki; Ikeda, Sunao; Okuzawa, Tugio; Kikuchi, Hideo; and Hibi, Kunio, 4,365,887, Cl. 355-14.00R.
Hickin, Charles W. R., to General Electric Company. Raster display generating system. 4,366,476, Cl. 340-747.000.
Hiebert, Harold L., deceased; and by Hoff, Shirley M., executrix. Adjustable pitch propeller drive. 4,365,937, Cl. 416-157.00R.
Hietaranta, Matti, to Valmet Oy. Adjustable spring unit for use in force measuring apparatus. 4,365,519, Cl. 73-862.520.
Higashino, Takashi: *See*—
Yamanishi, Akio; Sato, Kanichi; and Higashino, Takashi, 4,366,268, Cl. 523-144.000.
Hildebrand, Helmut: *See*—
Bode, Udo; Thiele, Paul; Mohring, Gunter; and Hildebrand, Helmut, 4,366,457, Cl. 333-237.000.
Hill, Edwin R., to Technicare Corporation. Shadowgraphic slit scanner with video display. 4,366,574, Cl. 378-99.000.
Hilti Aktiengesellschaft: *See*—
Hoyss, Franz; and Popp, Franz, 4,365,418, Cl. 33-185.00R.
Regelsberger, Wolfgang, 4,365,962, Cl. 464-39.000.
Weilenmann, Walter; and Frick, Nikolaus, 4,365,961, Cl. 464-36.000.
Himbury, Albert G. Process and apparatus for photographically enlarging and developing an image. 4,365,890, Cl. 355-28.000.
Hinchcliffe, Dennis; and Luddington, Eric A., to Molins Limited. Storing rod-like articles. 4,365,703, Cl. 198-347.000.
Hiraga, Imao: *See*—
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Hirai, Minoru: *See*—
Ikegami, Shigeru; Kawakatsu, Yoshihumi; Hirai, Minoru; and Izumi, Kazuo, 4,366,085, Cl. 252-431.00C.
Hirao, Motohisa; Nakamura, Michiharu; Doi, Atsutoshi; Tsuji, Shinji; Takeda, Yutaka; and Mori, Takao, to Hitachi, Ltd. Semiconductor laser device including an arrangement for preventing laser degradation caused by excessive current flow. 4,366,569, Cl. 372-46.000.
Hirata, Noritsugu; and Takimoto, Hiroyuki, to Canon Kabushiki Kaisha. Motion picture camera. 4,365,875, Cl. 352-25.000.
Hirose Electric Co., Ltd.: *See*—
Yaegashi, Hirokatsu; and Watanabe, Shinichi, 4,365,856, Cl. 339-14.00R.
Hirose, Masahiko; and Akai, Yoshimi, to Tokyo Shibaura Denki Kabushiki Kaisha. Apparatus for forming organic polymer thin films utilizing microwave induced plasmas. 4,365,587, Cl. 118-723.000.
Hirose, Masahiko: *See*—
Akai, Yoshimi; Hirose, Masahiko; and Sanpei, Hideo, 4,366,208, Cl. 428-421.000.
Hirota, Kazumi; and Matsuoka, Kikuo, to Toyo Seikan Kaisha, Limited. Method of manufacturing formed articles, equipment for practicing same, and formed articles manufactured by the method. 4,365,498, Cl. 72-351.000.
Hirota, Kazumi; and Matsuoka, Kikuo, to Toyo Seikan Kaisha, Limited. Method of manufacturing formed articles, equipment for practicing same, and formed articles manufactured by the method. 4,365,499, Cl. 72-351.000.
Hirsch, Ernest. Word game. 4,365,813, Cl. 273-272.000.
Hisajima, Masahiko: *See*—
Kimura, Hiroshi; Hisajima, Masahiko; Shigemura, Yutaka; and Irie, Yoichiro, 4,365,893, Cl. 355-75.000.
Hisashi, Takahashi; Satoshi, Hanai; and Katsuyoshi, Yoshida, to Nippon Steel Corporation. Apparatus for applying coating of molten metals. 4,365,583, Cl. 118-65.000.
Hitachi Engineering Co. Ltd.: *See*—
Masuda, Toyohiko; Ueno, Takeshi; Nagai, Yoji; Ishimaru, Hitoshi; and Nakamura, Shozo, 4,365,476, Cl. 60-686.000.
Hitachi, Ltd.: *See*—
Fukuzawa, Tadashi; Nakamura, Michiharu; and Takahashi, Susumu, 4,366,567, Cl. 372-38.000.
Furuhata, Takashi, 4,366,399, Cl. 307-519.000.
Hatada, Toshio; Senshu, Takao; Arai, Akira; Harada, Fumio; Matsuzaki, Atsushi; Futawatari, Hajime; Imaizumi, Yutaka; and Takeda, Sumiyoshi, 4,365,667, Cl. 165-152.000.
Hatayama, Shigeharu; Yamauchi, Masaaki; and Ikeda, Mamoru, 4,366,414, Cl. 313-409.000.
Hirao, Motohisa; Nakamura, Michiharu; Doi, Atsutoshi; Tsuji, Shinji; Takeda, Yutaka; and Mori, Takao, 4,366,569, Cl. 372-46.000.
Homma, Noriyuki; and Yamaguchi, Kunihiko, 4,366,558, Cl. 365-189.000.
Ibe, Hidefumi; and Yamada, Izumi, 4,366,438, Cl. 324-468.000.
Kitamura, Nobuaki; Masuda, Kouji; and Mizukami, Masao, 4,366,397, Cl. 307-264.000.
Kuroiwa, Hiroshi; and Sasayama, Takao, 4,366,524, Cl. 361-154.000.
Masuda, Ikuro; Shiraishi, Hisayoshi; Ogawa, Seiichiro; Shiono, Shigeo; Sakurai, Jinichi; and Yuminaka, Takeo, 4,366,478, Cl. 340-825.000.
Masuda, Toyohiko; Ueno, Takeshi; Nagai, Yoji; Ishimaru, Hitoshi; and Nakamura, Shozo, 4,365,476, Cl. 60-686.000.
Mayama, Shinji; and Arai, Yoji, 4,366,418, Cl. 315-326.000.
Mori, Kinji; and Ihara, Hirokazu, 4,366,479, Cl. 340-825.050.
Mouri, Yasunori; Suda, Seiji; Shida, Masami; and Furuhashi, Toshio, 4,366,541, Cl. 364-431.050.
Ogata, Masatsugu; Asano, Hideki; Narusawa, Tsuneo; and Narahara, Toshikazu, 4,366,516, Cl. 360-84.000.
Omae, Tsutomu; Marumoto, Katsuji; and Naito, Shotaro, 4,366,420, Cl. 318-338.000.
Sato, Tetsuo, 4,366,449, Cl. 330-278.000.
Suzuki, Kunio; and Takahashi, Minoru, 4,365,426, Cl. 34-101.000.
Tachibana, Akira; Endo, Akira; and Sekine, Kenji, 4,366,546, Cl. 364-571.000.
Takanashi, Akira; and Ishigami, Yasuhiko, 4,366,470, Cl. 340-347.0DA.
Tojo, Kenji; Hosoda, Taisei; Ikegawa, Masato; and Shiibayashi, Masao, 4,365,941, Cl. 417-372.000.
Watanabe, Kenichi; Kinoshita, Hiroshi; Tatsumi, Akira; and Goto, Koichi, 4,365,542, Cl. 98-40.00V.
Yamakido, Kazuo, 4,366,439, Cl. 329-104.000.
Hitachi Microcomputer Engineering Ltd.: *See*—
Takanashi, Akira; and Ishigami, Yasuhiko, 4,366,470, Cl. 340-347.0DA.
Hitachi Ome Electronic Co., Ltd.: *See*—
Kitamura, Nobuaki; Masuda, Kouji; and Mizukami, Masao, 4,366,397, Cl. 307-264.000.
Ho, Morris D., to Bandag Incorporated. Method and apparatus for non-destructive inspection of tires. 4,365,514, Cl. 73-592.000.
Ho, William W.; Hall, William F.; Fisher, Harry W.; and Perrine, Eugene B., to Rockwell International. Apparatus for calibrating meter prover encoder. 4,365,503, Cl. 73-3.000.
Hodel, Carl F. Avalanche survival vest. 4,365,628, Cl. 128-205.120.
Hodgkinson, Alec J., to Z.S. Electroniques (Proprietary) Limited. Concentric tube antenna encased in dielectric. 4,366,485, Cl. 343-791.000.
Hodgson, Gordon L., Jr., to Burroughs Wellcome Co. 1-(8-Quinolyl)-2-pyrrolidone and its pharmaceutical compositions. 4,366,158, Cl. 424-258.000.
Hoechst Fibers Industries, Division of American Hoechst Corporation: *See*—
Brantley, Zachry G., 4,365,395, Cl. 28-281.000.
Hoersch, Werner. Method for surface treatment of an endless textile structure. 4,365,424, Cl. 34-23.000.
Hoff, Shirley M., executrix: *See*—
Hiebert, Harold L., deceased; and Hoff, Shirley M., executrix, 4,365,937, Cl. 416-157.00R.
Hoffmann-La Roche Inc.: *See*—
de Silva, Wijitha, 4,365,991, Cl. 71-121.000.
Hofheinz, Werner; and Stohler, Harro, 4,366,166, Cl. 424-273.00R.
Ramuz, Henri, 4,366,160, Cl. 424-263.000.
Hofheinz, Werner; and Stohler, Harro, to Hoffmann-La Roche Inc. Filaricidal 2-nitroimidazole compounds. 4,366,166, Cl. 424-273.00R.
Hohne, Franz: *See*—
Pajonk, Heinz; Hohne, Franz; and Ruthardt, Rolf, 4,365,944, Cl. 425-7.000.
Hoilleres du Bassin de Larraine: *See*—
Leyendecker, Gustave, 4,366,026, Cl. 201-1.000.
Holbrook, Edward M.; and Wallace, Joseph J. Solar energy system for heating and cooling of buildings utilizing moist air cycles. 4,365,619, Cl. 126-428.000.

Hollweck, Walter, to Inter Control Hermann Kohler Elektrik GmbH & Co. KG. Temperature safety switch. 4,366,462, Cl. 337-409.000.
Holter, Heinz; Gresch, Heinz; Igelbuscher, Heinrich; Dewert, Heribert; Dzikowski, Berthold; and Twiehaus, Hans-Jurgen, to Holter, Heinz. Method of and apparatus for the chemisorptive scrubbing of waste gases. 4,366,132, Cl. 423-242.000.
Holtz, Frederick C., Jr.: *See—*
Rich, Dennis J.; and Holtz, Frederick C., Jr., 4,366,254, Cl. 501-89.000.
Holtz, Klaus E. Associative memory search system. 4,366,551, Cl. 364-900.000.
Holzl, Emil, to Krauss-Maffei Aktiengesellschaft. Apparatus for determining the gas content of a liquid. 4,365,505, Cl. 73-19.000.
Homma, Noriyuki; and Yamaguchi, Kunihiko, to Hitachi, Ltd. Memory device with fast word-line-discharging-circuits. 4,366,558, Cl. 365-189.000.
Honda, Kiyokazu: *See—*
Baba, Masaharu; Honda, Kiyokazu; and Hashima, Akiyoshi, 4,365,396, Cl. 29-25.130.
Nieda, Yasuhiro; Honda, Kiyokazu; and Shinada, Hidehiro, 4,366,409, Cl. 313-221.000.
Honemann, Rudolf, to Luk Lamellen und Kupplungsbau GmbH. Friction clutch. 4,365,697, Cl. 192-89.00B.
Honeywell, Inc.: *See—*
Kompelien, Arlon D., 4,366,534, Cl. 364-183.000.
Honeywell Information Systems Inc.: *See—*
Johnson, Robert B.; and Nibby, Chester M., Jr., 4,366,538, Cl. 364-200.000.
Johnson, Robert B.; and Nibby, Chester M., Jr., 4,366,539, Cl. 364-200.000.
Honig, Helmut: *See—*
Pampouchidis, Georg; and Honig, Helmut, 4,366,274, Cl. 523-415.000.
Honrado, Juanito, to Bowles Fluidics Corporation. Underdash air sweep system for automobiles. 4,365,540, Cl. 98-2.000.
Hood and Co., Inc.: *See—*
Golemo, Stanley M., Jr.; and Izbicki, Anthony J., 4,366,210, Cl. 428-617.000.
Hoover Universal, Inc.: *See—*
Mizelle, Ned W., 4,365,837, Cl. 297-216.000.
Horie, Katuo: *See—*
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Horii, Kenju: *See—*
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Horio, Noriyasu: *See—*
Ogura, Masato; Horio, Noriyasu; and Suzuki, Kinzo, 4,365,930, Cl. 415-61.000.
Horiuchi, Takumi; Kuroda, Yoji; and Hukatsu, Kenji, to Teijin Limited. Polyester spun-like textured yarn and method for manufacturing the same. 4,365,466, Cl. 57-205.000.
Horton, David, to Letraset Limited. Screen printing apparatus. 4,365,551, Cl. 101-124.000.
Horvath, Miklos; and Pichler, Hans-Peter, to Mag Maschinen und Apparatebau Gesellschaft mbH. Plant for producing enameled wire using an inline process. 4,365,790, Cl. 266-103.000.
Hosaka, Masao; Ogino, Yoshitaka; and Yanagawa, Nobuyuki, to Ricoh Company, Ltd. Electrostatic copying apparatus. 4,365,888, Cl. 355-14.00R.
Hoshall, Tom C. Material moving apparatus. 4,365,762, Cl. 241-60.000.
Hoshino, Masaru: *See—*
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Hosoda, Taisei: *See—*
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Hosoe, Kazuya: *See—*
Tsunekawa, Tokuichi; Date, Nobuaki; Aizawa, Hiroshi; Hosoe, Kazuya; and Urushibara, Kazunori, 4,366,501, Cl. 358-310.000.
Hosoi, Sadao: *See—*
Takano, Masayuki; Hosoi, Sadao; and Matsushita, Yuichi, 4,366,515, Cl. 360-77.000.
Hosokawa, Toshio. Rotary piston pump of axial type. 4,365,940, Cl. 417-269.000.
Hosono, Nagao; Miyake, Nobuyuki; Kanbe, Junichiro; Tsukada, Shusei; and Arao, Kozo, to Canon Kabushiki Kaisha. Developing device. 4,365,586, Cl. 118-652.000.
Hou, Kenneth C.: *See—*
Ostreicher, Eugene A.; and Hou, Kenneth C., 4,366,068, Cl. 210-767.000.
Houle, Conrad G.: *See—*
Specht, Donald P.; Houle, Conrad G.; and Farid, Samir Y., 4,366,228, Cl. 430-281.000.
Houle, Raymond T.; Redwine, Michael A.; Kilbourn, Fredrick A.; Reed, Stewart D.; Sills, Arthur A.; and Kraft, John H., to Silchor. Bathing units with door controller. 4,365,367, Cl. 4-555.000.
House, Hugh A. Universal syringe. 4,365,626, Cl. 128-218.0DA.
Houston, Herbert J.; and Dinsmore, Edward S., to Slater Steel Industries Limited. Conductor transfer device. 4,365,410, Cl. 29-762.000.
Houzeaux, Jean-Pierre: *See—*
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Howerton, Darrell V., to Cubic Western Data. Ticket metering and throat barrier module. 4,365,718, Cl. 209-586.000.
Howitt, George. Preparation of beverages. 4,365,544, Cl. 99-297.000.
Hoyss, Franz; and Popp, Franz, to Hilti Aktiengesellschaft. Drill stand with marking element. 4,365,418, Cl. 33-185.00R.
HPS, Inc.: *See—*
Jackson, Robert D., 4,366,429, Cl. 318-811.000.
Hsieh, Shane, to American Hoechst Corporation. Inorganic lithium developer composition. 4,366,224, Cl. 430-149.000.
Hu, Chenming, to National Semiconductor Corporation. Electrically erasable programmable read only memory. 4,366,555, Cl. 365-185.000.
Huber, Kurt: *See—*
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Hughes Aircraft Company: *See—*
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Huizinga, Hindrik: *See—*
Dijkshoorn, Willem; Huizinga, Hindrik; and Pronk, Jacobus N., 4,366,181, Cl. 426-603.000.
Hukatsu, Kenji: *See—*
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Hull, Donald A. Mixing apparatus for foam generation. 4,366,081, Cl. 252-359.00E.
Humphrey, William J.: *See—*
Witt, Enrique R.; Humphrey, William J.; and Cave, James P., 4,366,059, Cl. 210-615.000.
Hunt, Christopher J.: *See—*
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Hunterdon Occupational Training Center: *See—*
Gross, Ralph C., 4,366,018, Cl. 156-273.900.
Hussey, Sam W., to Reliance Electric Company. Continuously operating standby A-C power system. 4,366,389, Cl. 307-66.000.
Hutotechnika Ipari Szovetkezet: *See—*
Benyak, Istvan; Dudas, Lajos; and Pohl, Oszkar, 4,366,106, Cl. 261-156.000.
Hutt, Jack W.: *See—*
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Hutter, Harold G.; and Francis, Leonard J., to Bunker Ramo Corporation. Coaxial tap connector. 4,365,859, Cl. 339-97.00P.
Hyakutome, Kimiaki: *See—*
Kodera, Tokio; Hoshino, Masaru; and Hyakutome, Kimiaki, 4,366,125, Cl. 422-295.000.
Hyde, Robert L., to TRW Inc. Remotely operated downhole test disconnect switching apparatus. 4,365,506, Cl. 73-151.000.
Hydrocarbon Research, Inc.: *See—*
Chao, James C.; and Huibers, Derk T. A., 4,366,332, Cl. 568-863.000.
Hyodo, Kouichi, to Tokyo Shibaura Denki Kabushiki Kaisha. Power supply utilizing a thyristor. 4,366,435, Cl. 324-158.0SC.
Ibe, Hidefumi; and Yamada, Izumi, to Hitachi, Ltd. Sodium ionization detector. 4,366,438, Cl. 324-468.000.
Ichijima, Seiji; Adachi, Keiichi; and Ogawa, Tadashi, to Fuji Photo Film Co., Ltd. Silver halide color photographic light-sensitive material. 4,366,237, Cl. 430-505.000.
Ichikawa, Kesazi: *See—*
Habata, Kiichi; Ichikawa, Kesazi; and Shimizu, Mutsuo, 4,366,324, Cl. 556-460.000.
Ichikin, Ltd., The: *See—*
Kawaguchi, Bunshiro, 4,365,422, Cl. 34-1.000.
Ichinose, Kazuaki: *See—*
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Idemitsu Kosan Company Limited: *See—*
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Igelbuscher, Heinrich: *See—*
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Ihara, Hirokazu: *See—*
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IHC Holland N.V.: *See—*
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Iizuka, Haruhiko; and Sugasawa, Fukashi, to Nissan Motor Company, Limited. Split type internal combustion engine. 4,365,597, Cl. 123-198.00F.
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Alajos, Dobos; Kiss, Gyula; Gaspar, Bela; Imre, Geza; Jony nee Acs, Julia; Forian, Istvan; Ijjas, Istvan; Liptak, Ferenc; and Bisits nee Zsilinszky, Vilma, 4,365,757, Cl. 239-567.000.

Ikarus Karosszeria es Jarmugyar: *See*—
Ratsko, Istvan; Ivony, Jozsef; Madi, Jeno; and Karaszi, Gyorgy, 4,365,685, Cl. 180-135.000.
Ikeda, Akira: *See*—
Takeyama, Tetsu; Azuma, Kenkoku; Ikeda, Akira; Yamamoto, Toshie; and Katsurada, Shigeho, 4,365,979, Cl. 55-181.000.
Ikeda, Mamoru: *See*—
Hatayama, Shigeharu; Yamauchi, Masaaki; and Ikeda, Mamoru, 4,366,414, Cl. 313-409.000.
Ikeda, Sunao: *See*—
Kakitani, Yohtaro; Kaneko, Tamaki; Ikeda, Sunao; Okuzawa, Tugio; Kikuchi, Hideo; and Hibi, Kunio, 4,365,887, Cl. 355-14.00R.
Ikegami, Shigeru; Kawakatsu, Yoshihumi; Hirai, Minoru; and Izumi, Kazuo, to Toho Beslon Co., Ltd. Fibrous activated carbon with metal chelate compound supported thereon, process for producing the same. 4,366,085, Cl. 252-431.00C.
Ikegawa, Masato: *See*—
Tojo, Kenji; Hosoda, Taisei; Ikegawa, Masato; and Shiibayashi, Masao, 4,365,941, Cl. 417-372.000.
Ikemoto, Kazuhito: *See*—
Numazawa, Akio; Katayama, Nobuaki; Ikemoto, Kazuhito; Sasaki, Kan; and Terakura, Yukio, 4,365,523, Cl. 74-606.00R.
Ikemoto, Kazuo: *See*—
Arai, Toshio; Kanehira, Hidehiko; and Ikemoto, Kazuo, 4,366,364, Cl. 219-146.240.
Ikeura, Kenji, to Nissan Motor Company, Limited. Open and closed loop engine idling speed control method and system for an automotive internal combustion engine. 4,365,599, Cl. 123-339.000.
ILC Data Device Corporation: *See*—
Michaels, Stuart R.; and Sacks, Stephen J., 4,366,469, Cl. 340-347.0AD.
Illinois Tool Works Inc.: *See*—
Boyer, David C.; and Ruehl, William E., 4,365,582, Cl. 116-70.000.
Gore, William C., 4,365,861, Cl. 339-202.000.
Imaeda, Kozo: *See*—
Matsumoto, Tadayuki; Imaeda, Kozo; Mineo, Masatoshi; and Nakagawa, Kiyoshi, 4,365,394, Cl. 28-258.000.
Imai, Isao: *See*—
Shiozaki, Hiroyuki; Mikami, Masao; Imai, Isao; and Iwanami, Toshio, 4,365,496, Cl. 72-249.000.
Imaizumi, Yutaka: *See*—
Hatada, Toshio; Senshu, Takao; Arai, Akira; Harada, Fumio; Matsuzaki, Atsushi; Futawatari, Hajime; Imaizumi, Yutaka; and Takeda, Sumiyoshi, 4,365,667, Cl. 165-152.000.
IMAX Systems Corporation: *See*—
Shaw, William C., 4,365,877, Cl. 352-184.000.
Imazaike, Yasutaka. Damper. 4,365,525, Cl. 74-768.000.
Imazeki, Ryoji; and Hattori, Masayuki, to Fujitsu Fanuc Limited. Output voltage-drop detecting apparatus technical field. 4,366,433, Cl. 323-281.000.
Imhof, Rainer; Grunberg, Wolf-Diethard; and Unkelbach, Karl-Heinz, to Klockner-Humboldt-Deutz AG. Method and device for measuring the height of at least one separation layer in the material bed of a density sorting machine. 4,365,510, Cl. 73-313.000.
Imperial Chemical Industries Limited: *See*—
Briggs, Peter J., 4,366,203, Cl. 428-304.400.
Briggs, Peter J., 4,366,204, Cl. 428-304.400.
Thorpe, David, 4,366,287, Cl. 524-871.000.
Imre, Geza: *See*—
Alajos, Dobos; Kiss, Gyula; Gaspar, Bela; Imre, Geza; Jony nee Acs, Julia; Forian, Istvan; Ijjas, Istvan; Liptak, Ferenc; and Bisits nee Zsilinszky, Vilma, 4,365,757, Cl. 239-567.000.
Inaba, Hajimu; and Sakakibara, Shinsuke, to Fujitsu Fanuc Limited. Industrial robot system. 4,366,423, Cl. 318-563.000.
Inacker, Henry F.: *See*—
Henderson, Elmer L.; and Inacker, Henry F., 4,366,446, Cl. 330-260.000.
Ingels, Luis. Alignment device for machine head. 4,365,419, Cl. 33-185.00R.
Inglis Limited: *See*—
Paulson, Philip D., 4,365,830, Cl. 292-89.000.
Innovative Design, Inc.: *See*—
Sargent, Jack, 4,366,372, Cl. 235-92.0PL.
Inoue, Hiromitsu; Ohashi, Hiroshi; and Takada, Yuji, to Matsushita Electric Works, Ltd. Capacitively coupled electromagnetic intrusion warning system. 4,366,473, Cl. 340-562.000.
Inoue-Japax Research Incorporated: *See*—
Inoue, Kiyoshi, 4,366,007, Cl. 148-102.000.
Inoue, Kiyoshi, 4,366,358, Cl. 219-69.00M.
Inoue, Kiyoshi, 4,366,360, Cl. 219-69.00M.
Inoue, Kanji: *See*—
Ohno, Akira; Sato, Toshiaki; and Inoue, Kanji, 4,365,824, Cl. 280-689.000.
Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Permanent magnet and process for making same. 4,366,007, Cl. 148-102.000.
Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. EDM Method and apparatus utilizing successively displaced magnetic field. 4,366,358, Cl. 219-69.00M.
Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Method of and apparatus for determining relative position of a tool member to a workpiece in a machine tool. 4,366,360, Cl. 219-69.00M.
Inoue, Satoru: *See*—
Shima, Ichiji; Teshima, Hiroshi; Koizumi, Takayuki; and Inoue, Satoru, 4,366,544, Cl. 364-550.000.
Inoue, Tetsuo: *See*—
Kurihara, Masaru; Watanabe, Tetsuo; and Inoue, Tetsuo, 4,366,062, Cl. 210-651.000.
Inoue, Yozo; Hara, Kiyoshi; and Ito, Yoji, to Nippondenso Co., Ltd.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Method and system for controlling a vehicle-mounted air conditioner. 4,365,663, Cl. 165-12.000.
Insituform International Inc.: *See*—
Wood, Eric, 4,366,012, Cl. 156-93.000.
Institut Francais du Petrole: *See*—
Arnaudeau, Marcel, 4,365,932, Cl. 415-199.500.
Convers, Alain; Torck, Bernard; Euzen, Jean-Paul; and Amigues, Pierre, 4,366,327, Cl. 568-697.000.
Le Pennec, Dominique; Commereuc, Dominique; and Chauvin, Yves, 4,366,087, Cl. 252-431.00C.
Mikitenko, Paul; and Asselineau, Lionel, 4,366,032, Cl. 203-18.000.
Instituto Venezolano de Investigaciones Cientificas (IVIC): *See*—
Schutt, Jurgen M., 4,365,461, Cl. 56-14.300.
Instrumentation Laboratory Inc.: *See*—
Kearney, Susan D.; Dreier, Gustav H.; and Cormier, Alan D., 4,366,038, Cl. 204-195.00M.
Inter Control Hermann Kohler Elektrik GmbH & Co. KG: *See*—
Hollweck, Walter, 4,366,462, Cl. 337-409.000.
Intercole Bolling Corp.: *See*—
Kortan, William A.; and Nebrig, Donald A., 4,365,492, Cl. 72-10.000.
Intercollection Development SA: *See*—
Strassle, Alex, 4,365,839, Cl. 297-411.000.
International Business Machines Corp.: *See*—
Bates, Bobbie D.; and Haus, Ralph A., 4,365,779, Cl. 248-371.000.
Berglund, Neil C.; and Burchfiel, John R., Jr., 4,366,540, Cl. 364-200.000.
Braslau, Norman; Freeouf, John L.; Pettit, George D.; Rupprecht, Hans S.; and Woodall, Jerry M., 4,366,493, Cl. 357-4.000.
Chow, William W.; and Fields, Davis S., Jr., 4,366,518, Cl. 360-121.000.
Heller, Andrew R.; and Worley, William S., Jr., 4,366,537, Cl. 364-200.000.
International Computers Limited: *See*—
Berry, George A., 4,365,907, Cl. 403-12.000.
International Flavors & Fragrances Inc.: *See*—
Boden, Richard M.; Dekker, Lambert; Schmitt, Frederick L.; and Van Loveren, Augustinus G., 4,366,078, Cl. 252-174.110.
International Harvester Co.: *See*—
Robinson, Edward L., Jr.; Fardal, Randolph G.; and Anderson, David, 4,365,672, Cl. 172-2.000.
International Minerals & Chemical Luxembourg Societe Anonyme: *See*—
Lask, Gert-Wilhelm, 4,366,137, Cl. 423-350.000.
Internationale Octrooi Maatschappij "Octropa" B.V.: *See*—
Norman, Frederick A., 4,365,372, Cl. 6-1.000.
Intichar, Lutz: *See*—
Weghaupt, Erich; Intichar, Lutz; and Schnapper, Christoph, 4,365,479, Cl. 62-55.000.
Invisible Optics Inc.: *See*—
Softly, Peter, 4,365,866, Cl. 350-276.00R.
Iowa State University Research Foundation, Inc.: *See*—
Greer, Raymond T.; and Gibson, Ronald F., 4,365,741, Cl. 494-37.000.
Iqbal, Abul, to Ciba-Geigy Corporation. Metal complexes of isoindolinazines, process for their preparation and use. 4,366,312, Cl. 542-417.000.
IREQ - Institut de Recherche de l'Hydro-Quebec: *See*—
Trinh, Ngoc-Giao, 4,366,340, Cl. 174-28.000.
Irie, Yoichiro: *See*—
Kimura, Hiroshi; Hisajima, Masahiko; Shigemura, Yutaka; and Irie, Yoichiro, 4,365,893, Cl. 355-75.000.
Irish, Glenn E., to Union Oil Company of California. Middle distillate fuel additive. 4,365,973, Cl. 44-56.000.
Iriyama, Toru, to Toyo Kogyo Co., Ltd. Steering column supporting structure for motor vehicle. 4,365,826, Cl. 280-779.000.
Ishido, Yoshinobu; and Tanaka, Hideo, to Hayakawa Rubber Company Limited. Aqueously-swelling water stopper and a process of stopping water thereby. 4,366,284, Cl. 524-447.000.
Ishigami, Yasuhiko: *See*—
Takanashi, Akira; and Ishigami, Yasuhiko, 4,366,470, Cl. 340-347.0DA.
Ishiguro, Yasuo, to Copal Company Limited. Exposure controlling device adapted to cameras using interchangeable lenses. 4,365,879, Cl. 354-38.000.
Ishihara, Takao: *See*—
Takeuchi, Jun; Yamazumi, Kaishu; and Ishihara, Takao, 4,366,008, Cl. 148-143.000.
Ishii, Tadashi, to Kobishi Electric Co., Ltd. Motor actuated bell assembly. 4,366,472, Cl. 340-392.000.
Ishikawa, Yoshikazu, to Nissan Motor Co., Ltd. Hot-air intake system of an internal combustion engine. 4,365,607, Cl. 123-556.000.
Ishikawajima-Harima Jukogyo Kabushiki Kaisha: *See*—
Ohta, Ichiro; Tejima, Akio; Watando, Masayuki; Yamaoka, Akira; Ishiwata, Kouzi; and Yamada, Minoru, 4,366,362, Cl. 219-123.000.
Shiozaki, Hiroyuki; Mikami, Masao; Imai, Isao; and Iwanami, Toshio, 4,365,496, Cl. 72-249.000.
Ishimaru, Hitoshi: *See*—
Masuda, Toyohiko; Ueno, Takeshi; Nagai, Yoji; Ishimaru, Hitoshi; and Nakamura, Shozo, 4,365,476, Cl. 60-686.000.

Ishitani, Shigeo: *See—*
Uchida, Masaaki; Kanegae, Hidetoshi; and Ishitani, Shigeo, 4,366,039, Cl. 204-195.00S.

Ishiwata, Kouzi: *See—*
Ohta, Ichiro; Tejima, Akio; Watando, Masayuki; Yamaoka, Akira; Ishiwata, Kouzi; and Yamada, Minoru, 4,366,362, Cl. 219-123.000.

Ishkin, Vyacheslav K. Aerial power transmission line with lightning protection wires designed also to transmit rf signals. 4,366,392, Cl. 307-147.000.

Isuzu Motors, Limited: *See—*
Nakada, Teruo; and Iwahara, Mitsuo, 4,365,600, Cl. 123-339.000.

Italtractor I.T.M. S.p.A.: *See—*
Grilli, Walter; Crotti, Aldo; and Barchetti, Giuseppe, 4,365,848, Cl. 305-54.000.

Itek Corporation: *See—*
Simons, Brent S., 4,366,378, Cl. 250-214.0AG.

Ito, Etsuo: *See—*
Soma, Eichi; Kobayashi, Kohei; Karakawa, Takuro; Kato, Shigeyoshi; and Uchida, Kiichi, 4,366,308, Cl. 536-128.000.

Ito, Yoji: *See—*
Inoue, Yozo; Hara, Kiyoshi; and Ito, Yoji, 4,365,663, Cl. 165-12.000.

Itoh, Junya: *See—*
Abe, Mitsuo; Kamiya, Akira; Itoh, Junya; Mawatari, Masaaki; and Kurihara, Fumio, 4,366,281, Cl. 524-297.000.

Itoh, Kunio: *See—*
Shimizu, Hirokazu; Itoh, Kunio; Sugino, Takashi; and Wada, Masaru, 4,366,568, Cl. 372-45.000.

ITT Industries, Inc.: *See—*
Schopper, Bernd; Tandler, Peter; Hartmann, Herbert; and Reuter, Manfred, 4,365,846, Cl. 303-56.000.

Ivanov, Evgeny S.: *See—*
Bai, Roland D.; Brodovsky, Vladimir N.; Ivanov, Evgeny S.; Kanep, Alexandr A.; Feldman, Alexandr V.; and Chabanov, Alim I., 4,366,428, Cl. 318-809.000.

Ivony, Jozsef: *See—*
Ratsko, Istvan; Ivony, Jozsef; Madi, Jeno; and Karaszi, Gyorgy, 4,365,685, Cl. 180-135.000.

Iwahara, Mitsuo: *See—*
Nakada, Teruo; and Iwahara, Mitsuo, 4,365,600, Cl. 123-339.000.

Iwanami, Masao; and Ogawa, Yusuke, to Fuji Electric Co., Ltd. Water-cooled heat-accumulating type drink cooling system. 4,365,486, Cl. 62-392.000.

Iwanami, Toshio: *See—*
Shiozaki, Hiroyuki; Mikami, Masao; Imai, Isao; and Iwanami, Toshio, 4,365,496, Cl. 72-249.000.

Iwasaki, Shinichiro, to Aisin Seiki Company, Limited. Deceleration sensor. 4,365,513, Cl. 73-517.00R.

Iwase, Tetsuo; and Saiji, Mituhiro, to Sharp Kabushiki Kaisha. Dot matrix type running display panel for use in electronic calculators or the like. 4,366,477, Cl. 340-792.000.

Iwata, Atsushi: *See—*
Ueno, Norio; Kato, Seiji; and Iwata, Atsushi, 4,366,456, Cl. 333-173.000.

Iwata, Syuji: *See—*
Ohnishi, Masaru; and Iwata, Syuji, 4,366,491, Cl. 346-155.000.

Izbicki, Anthony J.: *See—*
Golemo, Stanley M., Jr.; and Izbicki, Anthony J., 4,366,210, Cl. 428-617.000.

Izumi, Kazuo: *See—*
Ikegami, Shigeru; Kawakatsu, Yoshihumi; Hirai, Minoru; and Izumi, Kazuo, 4,366,085, Cl. 252-431.00C.

J. I. Case Company: *See—*
Shumaker, John F., 4,365,428, Cl. 37-103.000.

J. J. Mauget Co.: *See—*
Lenardson, Donald D., 4,365,440, Cl. 47-57.500.

Jachowski, Johannes; and Mohs, Rudolf, to Fried. Krupp Gesellschaft mit beschrankter Haftung. Wear resistant compound material, method for manufacturing it and use of such compound material. 4,365,997, Cl. 148-31.000.

Jackson, Philip, to E. Beaudrey & Cie. Filter having a fixed strainer. 4,366,056, Cl. 210-435.000.

Jackson, Robert D., to HPS, Inc. Variable speed controller with improved efficiency of energy transfer for an AC induction motor. 4,366,429, Cl. 318-811.000.

Jackson, William R.; Chambers, Edwin G.; Kraus, Albert J.; and Lerdon, Wesley E., to Cleveland Chair Company. Motorized reclining chair. 4,365,836, Cl. 297-85.000.

Jacobs, Allen L.: *See—*
Stoopak, Samuel B.; Kornblum, Saul S.; and Jacobs, Allen L., 4,366,145, Cl. 424-37.000.

Jaecklin, Andre, to BBC Brown, Boveri & Company Limited. Optically activatable semiconductor component. 4,366,496, Cl. 357-38.000.

Jagle, Bruno, to Siemens Aktiengesellschaft. Electromechanical component sealing system. 4,366,345, Cl. 174-52.00S.

Jallageas, Jean C.; Arnaud, Alain; and Galzy, Pierre, to Anvar. Preparation process of optically active α-aminated acids by biological hydrolysis of nitriles. 4,366,250, Cl. 435-280.000.

Jameson, Calvin R.: *See—*
Dittman, William J.; and Jameson, Calvin R., 4,366,452, Cl. 333-108.000.

Jameson, John W. Gyroscopic walking toy. 4,365,437, Cl. 46-150.000.

Jamieson, John R., to Vickers Limited. Steering gear for ships. 4,365,573, Cl. 114-150.000.

Jamieson, Robert S. Sail system for sailboards. 4,365,570, Cl. 114-39.000.

Janak, Miloslav; Schonwald, Helmut; Tercic, Eduard; and Ginsberg, Martin, to U.S. Philips Corporation. Method and apparatus for dividing a track on a magnetizable information storage disc into sectors. 4,366,512, Cl. 360-48.000.

Japan Acrylic Chemical Co. Ltd.: *See—*
Kawamura, Sukeyoshi; Shimizu, Koichi; and Shikimori, Yasuhiro, 4,366,272, Cl. 523-335.000.

Japan EP Rubber Co., Ltd.: *See—*
Makino, Kenya; Sakurai, Hideo; Watanabe, Masaru; and Nishimura, Toshiyuki, 4,366,297, Cl. 526-119.000.

Japan Exlan Co., Ltd.: *See—*
Tanaka, Koji, 4,366,206, Cl. 428-373.000.

Japan Synthetic Rubber Co., Ltd.: *See—*
Abe, Mitsuo; Kamiya, Akira; Itoh, Junya; Mawatari, Masaaki; and Kurihara, Fumio, 4,366,281, Cl. 524-297.000.

Jaquet, Henri, to Jaquet Orthopedie SA. External bone-anchoring element. 4,365,624, Cl. 128-92.00A.

Jaquet Orthopedie SA: *See—*
Jaquet, Henri, 4,365,624, Cl. 128-92.00A.

Jaret, Robert: *See—*
Ganguly, Ashit K.; Liu, Yi-Tsung; Sarre, Olga; Jaret, Robert; and Schumacher, Doris P., 4,366,309, Cl. 536-7.100.

Jarry, Philippe; Guittard, Pierre; and Ducarre, Alphonse, to U.S. Philips Corporation. Method of manufacturing semiconductor structures by epitaxial growth from the liquid phase. 4,366,009, Cl. 148-171.000.

Jenner, John A.: *See—*
Gray, George W.; Lacey, David; Jenner, John A.; and Pellatt, Martin G., 4,366,330, Cl. 568-775.000.

Jennings, William J.: *See—*
Werner, Raymond J.; Jennings, William J.; Crowley, Daniel L.; and Smith, Frank J., 4,366,292, Cl. 525-240.000.

Jensen, Lynn E., to Cutter Laboratories, Inc. Air bubble detector. 4,366,384, Cl. 250-575.000.

Jensen, Theodore G.: *See—*
Ecker, Frank A.; Jensen, Theodore G.; and Christensen, Norman B., 4,365,429, Cl. 37-103.000.

Jessee, Ralph D., to Westinghouse Electric Corp. Sequence filters for determining the symmetrical components of multiphase AC power systems. 4,366,521, Cl. 361-76.000.

Jhaveri, Satish: *See—*
Mitsopoulos, Tom; Jhaveri, Satish; and Lui, Charles, 4,366,266, Cl. 523-143.000.

Jockers-Wretou, Evangelista: *See—*
Neumann, Siegfried; Hennrich, Norbert; Orth, Hans-Dieter; Pfleiderer, Gerhard; Jockers-Wretou, Evangelista; and Pauly, Hans, 4,366,242, Cl. 435-7.000.

Johannson, Johannes, to Lagoven, S.A. Method and apparatus for casting tubular bodies. 4,365,781, Cl. 249-11.000.

John Lysaght (Australia) Limited: *See—*
Andrew, Barry E.; and Mak, Tak W., 4,366,077, Cl. 252-49.300.

Johns Consolidated Limited: *See—*
Johns, Roy W., 4,365,792, Cl. 269-24.000.

Johns, Roy W., to Johns Consolidated Limited. Hydraulic mould clamp. 4,365,792, Cl. 269-24.000.

Johnson, John D.: *See—*
Gregorian, Razmic S.; Namboodri, Chettoor G.; and Johnson, John D., 4,365,968, Cl. 8-477.000.

Johnson, John W.: *See—*
Simpson, Frank F.; Johnson, John W.; and Oatham, Robert J., 4,366,403, Cl. 310-239.000.

Johnson, Nolton C., Jr.; and Rein, David A., to Mid Oregon Iron, Inc. Orbit saw. 4,365,530, Cl. 83-490.000.

Johnson, Norman E.; and Vasconcellos, Daniel F., to EG&G Sealol, Inc. Self-damping bellows seal assembly. 4,365,816, Cl. 277-88.000.

Johnson, Paul R.: *See—*
Frey, G. Robert; Rogus, Joseph A.; Johnson, Paul R.; and King, Richard A., 4,365,682, Cl. 180-89.130.

Johnson, Robert B.; and Nibby, Chester M., Jr., to Honeywell Information Systems Inc. Memory controller with queue control apparatus. 4,366,538, Cl. 364-200.000.

Johnson, Robert B.; and Nibby, Chester M., Jr., to Honeywell Information Systems Inc. Memory controller with burst mode capability. 4,366,539, Cl. 364-200.000.

Johnson, Robert R., to Brown & Williamson Tobacco Corporation. Cigarette filter. 4,365,641, Cl. 131-336.000.

Johnson, Wilton C., to Dia-Med, Inc. Perspiration indicating alarm for diabetics. 4,365,637, Cl. 128-734.000.

Jolly, Stuart T., to RCA Corporation. Fixture for VPE reactor. 4,365,588, Cl. 118-732.000.

Jolly, Walter R.: *See—*
Harry, Ieuan L.; Krihsnakumar, Suppayan M.; Jolly, Walter R.; and Beck, Martin H., 4,365,950, Cl. 425-534.000.

Jones, Dedger. Heliostatic solar energy conversion system. 4,365,618, Cl. 126-425.000.

Jones, James R.: *See—*
Abrams, Carl C., deceased; Abrams, Bernice, administratrix; and Jones, James R., 4,366,096, Cl. 525-498.000.

Jones, Robert F., to B. F. Goodrich Company, The. Belt application roller. 4,366,019, Cl. 156-360.000.

Jones, Thomas E. Sewer pipe plug. 4,365,649, Cl. 138-93.000.

Jony nee Acs, Julia: *See—*
Alajos, Dobos; Kiss, Gyula; Gaspar, Bela; Imre, Geza; Jony nee Acs, Julia; Forian, Istvan; Ijjas, Istvan; Liptak, Ferenc; and Bisits nee Zsilinszky, Vilma, 4,365,757, Cl. 239-567.000.

Jorg, Gunther W.: *See*—
Schellhaas, Rolf, 4,365,578, Cl. 114-272.000.

Jorgensen, Brian L.: *See*—
Remes, Paul A.; and Jorgensen, Brian L., 4,366,482, Cl. 340-825.690.

Joussemet, Pierre. Rod-type support for suspension systems for shelves and similar objects. 4,365,778, Cl. 248-229.000.

Joy Manufacturing Company: *See*—
Frey, G. Robert; Rogus, Joseph A.; Johnson, Paul R.; and King, Richard A., 4,365,682, Cl. 180-89.130.
Halloran, John D., 4,365,849, Cl. 308-9.000.

Judd, Myles A.: *See*—
Spangler, Richard M.; Burmeister, Eugene V.; Cada, Frank E.; Covington, Wayne F.; Christopher, Chris J.; Judd, Myles A.; Wenninger, Freddie W.; Watson, Robert E.; and Simcoe, Kent W., 4,366,553, Cl. 364-900.000.

Judet, Robert, deceased; and by Judet, Vincent, administrator. Joint prostheses, particularly in hip prostheses. 4,365,358, Cl. 3-1.912.

Judet, Vincent, administrator: *See*—
Judet, Robert, deceased; and Judet, Vincent, administrator, 4,365,358, Cl. 3-1.912.

Jung, Werner, to Teletype Corporation. Clamping device for form feed mechanisms. 4,365,905, Cl. 400-616.200.

Jurriens, Theodorus K.: *See*—
Bruynes, Cornelis A.; and Jurriens, Theodorus K., 4,366,315, Cl. 544-16.000.

Kabas, Guglielmo: *See*—
Burdeska, Kurt; Kabas, Guglielmo; and Weber, Kurt, 4,366,189, Cl. 427-157.000.

Kabel- u. Metallwerke Gutehoffnungshutte AG: *See*—
Bode, Udo; Thiele, Paul; Mohring, Gunter; and Hildebrand, Helmut, 4,366,457, Cl. 333-237.000.
Voigt, Hermann U.; and Patzke, Frank, 4,366,107, Cl. 264-25.000.

Kabushiki Kaisha Bon'ni: *See*—
Nakano, Yasuo, 4,365,732, Cl. 223-57.000.

Kabushiki Kaisha Fujikoshi: *See*—
Takeuchi, Jun; Yamazumi, Kaishu; and Ishihara, Takao, 4,366,008, Cl. 148-143.000.

Kabushiki Kaisha Komatsu Seisakusho: *See*—
Yamanishi, Akio; Sato, Kanichi; and Higashino, Takashi, 4,366,268, Cl. 523-144.000.

Kabushiki Kaisha Medos Kenkyusho: *See*—
Takahashi, Nagashige; and Harada, Shinichi, 4,366,529, Cl. 362-4.000.

Kabushiki Kaisha Ricoh: *See*—
Ejiri, Koichi; Kurose, Morisumi; and Maeda, Mamoru, 4,366,506, Cl. 358-260.000.

Kabushiki Kaisha Suwa Seikosha: *See*—
Ushikoshi, Kenichi; and Hiraga, Imao, 4,365,899, Cl. 368-220.000.
Wakai, Youichi, 4,365,898, Cl. 368-187.000.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See*—
Mori, Mitsuo; and Suzuki, Yoshihisa, 4,365,388, Cl. 19-159.00A.

Kabushiki Kaisha Toyota Chuo Kenkyusho: *See*—
Tanasawa, Yasusi; Muto, Norio; Saito, Akinori; and Kawamura, Kiyomi, 4,365,746, Cl. 239-125.000.

K.K. Musashino Kagaku Kenkyusho: *See*—
Yukawa, Muneaki, 4,366,280, Cl. 524-291.000.

Kageyama, Hidehei; and Suzuki, Takahiko, to Kotobuki & Co., Ltd. Clip for writing utensil. 4,365,390, Cl. 24-11.00R.

Kakitani, Yohtaro; Kaneko, Tamaki; Ikeda, Sunao; Okuzawa, Tugio; Kikuchi, Hideo; and Hibi, Kunio, to Ricoh Company, Ltd. Sheet distribution method and apparatus. 4,365,887, Cl. 355-14.00R.

Kakuta, Yoshiyuki: *See*—
Saito, Tadao; Kishi, Takao; and Kakuta, Yoshiyuki, 4,365,729, Cl. 222-321.000.

Kalenda, Norman W.: *See*—
Anderson, Richard B.; and Kalenda, Norman W., 4,366,218, Cl. 430-17.000.

Kamiya, Akira: *See*—
Abe, Mitsuo; Kamiya, Akira; Itoh, Junya; Mawatari, Masaaki; and Kurihara, Fumio, 4,366,281, Cl. 524-297.000.

Kamohara, Eiji: *See*—
Takenaka, Shigeo; and Kamohara, Eiji, 4,366,415, Cl. 313-457.000.

Kamyr, Inc.: *See*—
Elmore, Carl L.; Funk, Erwin D.; and Poulin, Ted M., 4,365,974, Cl. 48-111.000.

Kan, Masanori: *See*—
Yoshida, Akira; and Kan, Masanori, 4,365,659, Cl. 152-354.00R.

Kanatani, Yoshiharu, to Sharp Kabushiki Kaisha. Thin-film EL image display panel. 4,366,504, Cl. 358-241.000.

Kanbe, Junichiro: *See*—
Hosono, Nagao; Miyake, Nobuyuki; Kanbe, Junichiro; Tsukada, Shusei; and Arao, Kozo, 4,365,586, Cl. 118-652.000.

Kanda, Katsumi: *See*—
Tanaka, Atsuo; Okamura, Takaaki; Kanda, Katsumi; and Kondo, Yoshikazu, 4,366,185, Cl. 427-386.000.

Kanegae, Hidetoshi: *See*—
Uchida, Masaaki; Kanegae, Hidetoshi; and Ishitani, Shigeo, 4,366,039, Cl. 204-195.00S.

Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See*—
Shiozaki, Ken; Tsuge, Kazunori; and Ohnishi, Akira, 4,366,093, Cl. 252-477.00R.

Kanehira, Hidehiko: *See*—
Arai, Toshio; Kanehira, Hidehiko; and Ikemoto, Kazuo, 4,366,364, Cl. 219-146.240.

Kaneko, Tamaki: *See*—
Kakitani, Yohtaro; Kaneko, Tamaki; Ikeda, Sunao; Okuzawa, Tugio; Kikuchi, Hideo; and Hibi, Kunio, 4,365,887, Cl. 355-14.00R.

Kanep, Alexandr A.: *See*—
Bai, Roland D.; Brodovsky, Vladimir N.; Ivanov, Evgeny S.; Kanep, Alexandr A.; Feldman, Alexandr V.; and Chabanov, Alim I., 4,366,428, Cl. 318-809.000.

Kaneshige, Nobuhiko: *See*—
Kato, Akifumi; Kaneshige, Nobuhiko; and Yamamoto, Ryoichi, 4,366,123, Cl. 422-135.000.

Kaneshiro, Edward S. Tool holder. 4,365,720, Cl. 211-60.00T.

Kang, Jung W.: *See*—
Gunesin, Binnur; Hamed, Gary R.; Kang, Jung W.; and Schulz, Donald N., 4,366,291, Cl. 525-218.000.

Karadsheh, Sam M.; and Radomski, Thomas A., to General Motors Corporation. Phase control for a multiple phase SCR chopper. 4,366,531, Cl. 363-57.000.

Karakawa, Takuro: *See*—
Soma, Eichi; Kobayashi, Kohei; Karakawa, Takuro; Kato, Shigeyoshi; and Uchida, Kiichi, 4,366,308, Cl. 536-128.000.

Karasev, Vadim A.: *See*—
Chukhanov, Zinovy F.; Chukhanov, Zinovy Z.; Tsuprov, Sergei A.; Lyashenko, Ivan V.; Apter, Danil M.; Nikolaev, Anatoly M.; and Karasev, Vadim A., 4,366,043, Cl. 208-8.00R.

Karaszi, Gyorgy: *See*—
Ratsko, Istvan; Ivony, Jozsef; Madi, Jeno; and Karaszi, Gyorgy, 4,365,685, Cl. 180-135.000.

Karol, James J., to Bendix Corporation, The. Molded protection cap. 4,365,858, Cl. 339-36.000.

Karpov, Jury A.; Burylev, Boris P.; Glavin, German G.; Kvin, Valeria E.; Kovalev, Vasily V.; Natanson, Konstantin J.; Orlov, Vladimir V.; Kuznetsov, Lev B.; Zaitsev, Anatoly M.; Kartsev, Valentin E.; Morozov, Vladimir M.; and Kovalev, Gennady G. Method for quantitative analysis of chemical composition of inorganic material. 4,365,969, Cl. 436-75.000.

Kartschmaroff, Peter; Forster, Ewald; and Schaffner, Armin, to Ciba-Geigy Corporation. Moldable prepolymers based on alkali metal silicates and alkaline earth metal silicates. 4,366,136, Cl. 423-331.000.

Kartsev, Valentin E.: *See*—
Karpov, Jury A.; Burylev, Boris P.; Glavin, German G.; Kvin, Valeria E.; Kovalev, Vasily V.; Natanson, Konstantin J.; Orlov, Vladimir V.; Kuznetsov, Lev B.; Zaitsev, Anatoly M.; Kartsev, Valentin E.; Morozov, Vladimir M.; and Kovalev, Gennady G., 4,365,969, Cl. 436-75.000.

Kashima, Toru: *See*—
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Kaslick, Ralph S.: *See*—
Golub, Lorne M.; and Kaslick, Ralph S., 4,366,144, Cl. 424-9.000.

Kasuga, Masao, to Victor Company of Japan, Limited. Variable speed digital reproduction system using a digital low-pass filter. 4,366,471, Cl. 340-347.0DA.

Kasuya, Yoshihiro, to Nippon Electric Co., Ltd. Integrated logic circuit adapted to performance tests. 4,366,393, Cl. 307-221.00R.

Kataoka, Minoru: *See*—
Mochida, Haruo; Tanaka, Yoshiyuki; Yamamoto, Yoshio; and Kataoka, Minoru, 4,365,488, Cl. 464-132.000.

Kataoka, Shigeyuki: *See*—
Mori, Takashi; Takaku, Sakae; Matsuura, Fumiaki; Murakami, Yasushi; Noda, Yukifumi; Yamazaki, Tamotsu; Neichi, Tomohiro; Nakakimura, Hiroshi; Kataoka, Shigeyuki; Matsuno, Takashi; Hata, Shun-ichi; and Takanashi, Shigeru, 4,366,161, Cl. 424-266.000.

Katayama, Aisuke. Multiplier with index transforms modulo a prime or modulo a fermat prime and the fermat prime less one. 4,366,549, Cl. 364-757.000.

Katayama, Nobuaki: *See*—
Numazawa, Akio; Katayama, Nobuaki; Ikemoto, Kazuhito; Sasaki, Kan; and Terakura, Yukio, 4,365,523, Cl. 74-606.00R.

Kathiriya, Shiraz A.: *See*—
Linden, Gary L.; and Kathiriya, Shiraz A., 4,366,193, Cl. 427-340.000.

Kato, Akifumi; Kaneshige, Nobuhiko; and Yamamoto, Ryoichi, to Mitsui Petrochemical Industries Ltd. Anchor agitator for gaseous phase polymerization vessel. 4,366,123, Cl. 422-135.000.

Kato, Seiji: *See*—
Ueno, Norio; Kato, Seiji; and Iwata, Atsushi, 4,366,456, Cl. 333-173.000.

Kato, Shigeyoshi: *See*—
Soma, Eichi; Kobayashi, Kohei; Karakawa, Takuro; Kato, Shigeyoshi; and Uchida, Kiichi, 4,366,308, Cl. 536-128.000.

Kato, Toshiro: *See*—
Yamada, Yoshimi; Ooishi, Tadashi; Kato, Toshiro; and Mukai, Kunio, 4,366,150, Cl. 424-199.000.

Katoh Electrical Machinery Co. Ltd.: *See*—
Gotoh, Akio, 4,365,385, Cl. 16-382.000.

Katsube, Junki: *See*—
Ono, Keiichi; Kawakami, Hajime; and Katsube, Junki, 4,366,157, Cl. 424-256.000.

Katsurada, Shigeho: *See*—
Takeyama, Tetsu; Azuma, Kenkoku; Ikeda, Akira; Yamamoto, Toshie; and Katsurada, Shigeho, 4,365,979, Cl. 55-181.000.

Katsuyoshi, Yoshida: *See*—
Hisashi, Takahashi; Satoshi, Hanai; and Katsuyoshi, Yoshida, 4,365,583, Cl. 118-65.000.

Katz, Carlos: *See*—
Bahder, George; Katz, Carlos; Dima, Attila F.; and Knott, Adolf S., 4,365,947, Cl. 425-384.000.
Kaufman, Benjamin J.: *See*—
Sung, Rodney L.; Sweeney, William M.; and Kaufman, Benjamin J., 4,365,972, Cl. 44-53.000.
Kawaguchi, Bunshiro, to Ichikin, Ltd., The. Method and apparatus for continual treatment of textile sheet material by application of microwaves. 4,365,422, Cl. 34-1.000.
Kawaguchi, Hideo: *See*—
Shinagawa, Yukio; Ohtani, Sumio; Suematsu, Koichi; and Kawaguchi, Hideo, 4,366,239, Cl. 430-533.000.
Kawai, Taneichi; Nishida, Koji; Miyake, Osamu; and Hamajima, Shigemitsu, to Aisin Seiki Kabushiki Kaisha. Control apparatus for automatic embroidery sewing machine. 4,365,565, Cl. 112-103.000.
Kawakami, Hajime: *See*—
Ono, Keiichi; Kawakami, Hajime; and Katsube, Junki, 4,366,157, Cl. 424-256.000.
Kawakatsu, Yoshihumi: *See*—
Ikegami, Shigeru; Kawakatsu, Yoshihumi; Hirai, Minoru; and Izumi, Kazuo, 4,366,085, Cl. 252-431.00C.
Kawamoto, Masahiro: *See*—
Mizunoya, Kiyoshi; Matsumoto, Shoichi; Tomii, Hitoshi; Kawamoto, Masahiro; and Wada, Yuusuke, 4,366,080, Cl. 252-299.300.
Kawamura, Kiyomi: *See*—
Tanasawa, Yasusi; Muto, Norio; Saito, Akinori; and Kawamura, Kiyomi, 4,365,746, Cl. 239-125.000.
Kawamura, Masaharu: *See*—
Kiuchi, Masayoshi; Kawamura, Masaharu; and Murakami, Hiroyasu, 4,365,880, Cl. 354-60.00L.
Kawamura, Sukeyoshi; Shimizu, Koichi; and Shikimori, Yasuhiro, to Japan Acrylic Chemical Co. Ltd. Method for recovering synthetic resin emulsion. 4,366,272, Cl. 523-335.000.
Kawanabe, Tsuyoshi, to Canon Kabushiki Kaisha. Recording type electronic apparatus. 4,366,545, Cl. 364-569.000.
Kawashima, Akira: *See*—
Mizutani, Taku; Yamagishi, Michio; Mizoue, Kazutoshi; Kawashima, Akira; Omura, Sadafumi; Otake, Noboru; and Seto, Haruo, 4,366,311, Cl. 536-123.000.
Kearney, Susan D.; Dreier, Gustav H.; and Cormier, Alan D., to Instrumentation Laboratory Inc. Method of casting in place an ion-sensitive membrane and ion-sensitive electrode using said membrane. 4,366,038, Cl. 204-195.00M.
Kehl, Norman J.; and Magnuson, Richard C., to Coach & Car Equipment Corporation. Seat with back cushion attachment. 4,365,840, Cl. 297-443.000.
Kelley Company Inc.: *See*—
Bennett, David E., 4,365,374, Cl. 14-71.700.
Kelly, Leonard. Radiometric ore sorting method and apparatus. 4,365,719, Cl. 209-589.000.
Kelsey Hayes Company: *See*—
Neill, Daniel L.; and Tribe, Leonard T., 4,365,406, Cl. 29-593.000.
Kelson, Arthur F.: *See*—
Waisbren, Avery; and Kelson, Arthur F., 4,365,752, Cl. 239-381.000.
Kemp, Dennis E., Jr. Dead shaft bearing for conveyors. 4,365,707, Cl. 198-672.000.
Kennecott Corporation: *See*—
Godwin, Jerry L., 4,365,698, Cl. 193-2.00B.
Kennedy, John H.: *See*—
Bunce, Roger A.; Carter, Timothy J. N.; Kennedy, John H.; Kricka, Larry J.; and Whitehead, Thomas P., 4,366,118, Cl. 422-57.000.
Keramidas, Vassilis G.; McCoy, Robert J.; and Temkin, Henryk, to Bell Telephone Laboratories, Incorporated. Ohmic contact to p-type InP. 4,366,186, Cl. 427-89.000.
Kernforschungszentrum Karlsruhe GmbH: *See*—
Forster, Siegfried; and Friesinger, Gunter, 4,366,460, Cl. 335-216.000.
Schmidt, Curt, 4,365,942, Cl. 417-412.000.
Keskkula, Henno; Maass, Donald A.; and McCreedy, Kathleen M., to Dow Chemical Company, The. Acrylate-grafted elastomers as polymer modifiers. 4,366,289, Cl. 525-78.000.
Kesling, Peter C. Mold for making a tooth positioning and retaining appliance with air holes. 4,365,783, Cl. 249-124.000.
Khare, Gyaneshwari P., to Vulcan Materials Company. Process for removing residual hydrazine from caustic solutions. 4,366,130, Cl. 423-201.000.
Kikkawa, Ikuo: *See*—
Yoshioka, Mitsuru; Uyeo, Shoichiro; Hamashima, Yoshio; Kikkawa, Ikuo; Tsuji, Teruji; and Nagata, Wataru, 4,366,316, Cl. 544-90.000.
Kikuchi, Hideo: *See*—
Kakitani, Yohtaro; Kaneko, Tamaki; Ikeda, Sunao; Okuzawa, Tugio; Kikuchi, Hideo; and Hibi, Kunio, 4,365,887, Cl. 355-14.00R.
Kilbourn, Fredrick A.: *See*—
Houle, Raymond T.; Redwine, Michael A.; Kilbourn, Fredrick A.; Reed, Stewart D.; Sills, Arthur A.; and Kraft, John H., 4,365,367, Cl. 4-555.000.
Kimberly-Clark Corporation: *See*—
Borovsky, Joseph, 4,366,202, Cl. 428-283.000.
Dinius, James H.; and Chung, Raymond, 4,366,111, Cl. 264-518.000.
Kimura, Hiroshi; Hisajima, Masahiko; Shigemura, Yutaka; and Irie, Yoichiro, to Mita Industrial Company Limited. Supporting mechanism of a document cover lid for a copying apparatus. 4,365,893, Cl. 355-75.000.
King, Kenneth L. Rigging terminal assembly. 4,365,906, Cl. 403-2.000.
King, Richard A.: *See*—
Frey, G. Robert; Rogus, Joseph A.; Johnson, Paul R.; and King, Richard A., 4,365,682, Cl. 180-89.130.
Kinoshita, Hiroshi: *See*—
Watanabe, Kenichi; Kinoshita, Hiroshi; Tatsumi, Akira; and Goto, Koichi, 4,365,542, Cl. 98-40.00V.
Kinugawa, Masumi: *See*—
Yamazoe, Hisamitsu; Kinugawa, Masumi; and Kurii, Masaaki, 4,365,601, Cl. 123-339.000.
Kiresuto Kagaku Kabushiki Kaisha: *See*—
Fujita, Toshio; and Kashima, Toru, 4,365,999, Cl. 106-90.000.
Kirk Bridges, Inc.: *See*—
Bridges, Thomas K.; and Nourse, Howard, 4,366,057, Cl. 210-437.000.
Kirsch, Howard C., to Bell Telephone Laboratories, Incorporated. Delay gate circuit. 4,366,400, Cl. 307-594.000.
Kishi, Hajimu; and Tanaka, Kunio, to Fujitsu Fanuc Limited. Image display system. 4,366,475, Cl. 340-731.000.
Kishi, Takao: *See*—
Saito, Tadao; Kishi, Takao; and Kakuta, Yoshiyuki, 4,365,729, Cl. 222-321.000.
Kiss, Gyula: *See*—
Alajos, Dobos; Kiss, Gyula; Gaspar, Bela; Imre, Geza; Jony nee Acs, Julia; Forian, Istvan; Ijjas, Istvan; Liptak, Ferenc; and Bisits nee Zsilinszky, Vilma, 4,365,757, Cl. 239-567.000.
Kitagawa, Sadao; and Okada, Isao, to Mitsubishi Petrochemical Company Limited. Unsaturated copolymers. 4,366,296, Cl. 526-77.000.
Kitamura, Nobuaki; Masuda, Kouji; and Mizukami, Masao, to Hitachi, Ltd.; and Hitachi Ome Electronic Co., Ltd. Level conversion circuit. 4,366,397, Cl. 307-264.000.
Kitamura, Takashi, to Canon Kabushiki Kaisha. Semiconductor laser device. 4,366,492, Cl. 346-160.000.
Kiuchi, Masayoshi; Kawamura, Masaharu; and Murakami, Hiroyasu, to Canon Kabushiki Kaisha. Indicator for camera. 4,365,880, Cl. 354-60.00L.
Kiwi Coders Corporation: *See*—
Siegal, Burton L.; and Waxman, Jay S., 4,365,554, Cl. 101-333.000.
Kjellberg, Bengt E. S.: *See*—
Bjork, Anders K. K.; Abramo, Aina L.; and Kjellberg, Bengt E. S., 4,366,162, Cl. 424-267.000.
Klahr, Erhard: *See*—
Vodrazka, Wolfgang; Klahr, Erhard; Oppenlaender, Knut; Trieselt, Wolfgang; Stoeckigt, Dieter; and Neumann, Werner, 4,366,326, Cl. 568-613.000.
Klaus, Gerald R.; Williams, Thomas E.; and Nizzere, Paul D., to Bankers Box Company. Copy holder. 4,365,431, Cl. 40-352.000.
Klein, Fred T., to Phillips Petroleum Company. Method and apparatus for testing a plurality of geophones. 4,366,561, Cl. 367-77.000.
Kleiner, Frank: *See*—
Freitag, Dieter; Nouvertne, Werner; Reinking, Klaus; Tacke, Peter; Kleiner, Frank; and Schmidt, Manfred, 4,366,276, Cl. 524-94.000.
Kline, Larry H. Flowable substance applicator. 4,365,631, Cl. 128-235.000.
Klockner-Humboldt-Deutz AG: *See*—
Imhof, Rainer; Grunberg, Wolf-Diethard; and Unkelbach, Karl-Heinz, 4,365,510, Cl. 73-313.000.
Klockner-Werke AG: *See*—
Stori, Heinrich; and Averdiek, Walter, 4,365,478, Cl. 62-45.000.
Klukow, Roger, to Chesley F. Carlson Company. Web bending fixture. 4,365,500, Cl. 72-387.000.
Klumpp, Rosalie J.: *See*—
Haines, Donald A.; Frost, John S.; and Klumpp, Rosalie J., 4,365,504, Cl. 73-3.000.
Knapp, Heinrich; Sauer, Rudolf; Hans, Waldemar; Linssen, Mathias; Peczkowski, Jurgen; and Krauss, Rudolf, to Robert Bosch GmbH. Electromagnetically actuatable fuel injection valve. 4,365,747, Cl. 239-125.000.
Knapp, Helmut, to MINOX GmbH. Still camera with retracting objective. 4,365,884, Cl. 354-187.000.
Knerr, Theodore N.: *See*—
Bevilaqua, Ernest M.; McCroskery, Allan L.; and Knerr, Theodore N., 4,365,691, Cl. 187-1.00R.
Kneubuehl, Arnold S.; and Kneubuehl, Stephen A. Low fat cheese product similar to swiss cheese. 4,366,174, Cl. 426-36.000.
Kneubuehl, Stephen A.: *See*—
Kneubuehl, Arnold S.; and Kneubuehl, Stephen A., 4,366,174, Cl. 426-36.000.
Knifton, John F.; and Lin, Jiang-Jen, to Texaco, Inc. Production of acetic acid and propionic acid and their esters. 4,366,259, Cl. 518-700.000.
Knoke, Manfred: *See*—
Stiller, Armin; and Knoke, Manfred, 4,365,602, Cl. 123-414.000.
Knorre, Helmut; Langer, Manfred; Fauser, Friedrich; and Fischer, Willi, to Leybold-Heraeus GmbH; and Degussa Aktiengesellschaft. Process for recycling of used lubricating oils. 4,366,049, Cl. 208-179.000.
Knott, Adolf S.: *See*—
Bahder, George; Katz, Carlos; Dima, Attila F.; and Knott, Adolf S., 4,365,947, Cl. 425-384.000.
Koba, Mikhail G.: *See*—
Brounshtein, Viktor B.; Petrov, Vladimir I.; Otsup, Rudolf R.; Ignatieva, Galina P.; Kozlovsky, Vladlen V.; Lipshits, Leonard

Y.; Zhuravlev, Oleg V.; Koba, Mikhail G.; Seliverstov, Konstantin B.; Igisheva, Tamara A.; Drobyazko, Petr A.; Motin, Anatoly I.; Fot, Viktor D.; Yakimov, Lev T.; and Kuznetsov, Boris G., 4,366,124, Cl. 422-278.000.

Kobayashi, Kohei: *See*—
Soma, Eichi; Kobayashi, Kohei; Karakawa, Takuro; Kato, Shigeyoshi; and Uchida, Kiichi, 4,366,308, Cl. 536-128.000.

Kobayashi, Morio: *See*—
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Kobayashi, Waichi: *See*—
Suzukawa, Yuichi; Kobayashi, Waichi; and Ohtaka, Satoshi, 4,366,257, Cl. 501-123.000.

Kobe Steel, Ltd.: *See*—
Arai, Toshio; Kanehira, Hidehiko; and Ikemoto, Kazuo, 4,366,364, Cl. 219-146.240.
Asari, Akira, 4,365,497, Cl. 72-255.000.

Kobishi Electric Co., Ltd.: *See*—
Ishii, Tadashi, 4,366,472, Cl. 340-392.000.

Koch, Bernhard R.; and Vogelbacher, Erich, to Sulzer Brothers Limited. Crossing thread supply system for a weaving machine. 4,365,652, Cl. 139-50.000.

Kochi, Hiromu: *See*—
Takaya, Takao; Masugi, Takashi; Takasugi, Hisashi; and Kochi, Hiromu, 4,366,153, Cl. 424-246.000.

Kodera, Tokio; Hoshino, Masaru; and Hyakutome, Kimiaki, to Dai Nippon Insatsu Kabushiki Kaisha. Sterilization apparatus and process utilizing synergistic effect of combining hydrogen peroxide and ultra-violet-ray sterilization. 4,366,125, Cl. 422-295.000.

Koepke, Donald B.; and Reed, Martin C., to Whirlpool Corporation. Sliding actuator membrane switch for organ keyboard. 4,365,536, Cl. 84-433.000.

Kohata, Masakazu; Hayashi, Hideki; and Miyashita, Ichiro, to Toyo Denki Seizo Kabushiki Kaisha. PWM Inverter device. 4,366,533, Cl. 363-136.000.

Kohler, Karl-Axel; Collin, Rolf; and Larsson, Ralf. Method and installation for roasting and grilling skin-covered meat product, such as poultry and particularly chicken. 4,366,182, Cl. 426-644.000.

Kohler, Kurt, to Carl Zeiss-Stiftung. Device for the fine adjustment in all three directions of space of an instrument arranged on a base. 4,365,521, Cl. 74-471.0XY.

Kohn, Leslie D., to National Semiconductor Corporation. Modular digital computer system for storing and selecting data processing procedures and data. 4,366,536, Cl. 364-200.000.

Koizumi, Takashi: *See*—
Fukushima, Osamu; and Koizumi, Takashi, 4,365,795, Cl. 271-236.000.

Koizumi, Takayuki: *See*—
Shima, Ichiji; Teshima, Hiroshi; Koizumi, Takayuki; and Inoue, Satoru, 4,366,544, Cl. 364-550.000.

Kojima, Keiichi: *See*—
Miyamoto, Yoshimi; Kojima, Keiichi; and Toriumi, Yasuo, 4,366,464, Cl. 338-214.000.

Kojima, Sadao; Shimada, Masaaki; Sakai, Kunio; and Horie, Katuo. Method and apparatus for the preparation of slaked lime solution. 4,366,142, Cl. 423-640.000.

Komatsu, Toshio: *See*—
Nawata, Takanari; Komatsu, Toshio; and Ohtsuka, Masayuki, 4,366,179, Cl. 426-395.000.

Kompelien, Arlon D., to Honeywell, Inc. Electronic condition control system using digital anticipation. 4,366,534, Cl. 364-183.000.

Kondo, Yoshikazu: *See*—
Tanaka, Atsuo; Okamura, Takaaki; Kanda, Katsumi; and Kondo, Yoshikazu, 4,366,185, Cl. 427-386.000.

Konishiroku Photo Industry Co., Ltd.: *See*—
Hazama, Kiyoaki; Shiozawa, Kazuo; and Matsumoto, Koichi, 4,365,881, Cl. 354-76.000.
Nakamura, Hiroya, 4,365,894, Cl. 355-77.000.

Kopf, Peter W., to Union Carbide Corporation. Particulate resoles with improved cure rate and sinter resistance. 4,366,303, Cl. 528-129.000.

Koppers Company, Inc.: *See*—
Bixby, Robert P.; and Ziegler, Eugene, 4,366,029, Cl. 202-262.000.

Korach, Malcolm; and Chamberlin, Ronald D., to PPG Industries, Inc. Method of preparing a cathode-diaphragm unit. 4,366,041, Cl. 204-252.000.

Korfmann, Robert G.; and Bennett, Richard C. Chimney cleaning system. 4,365,382, Cl. 15-249.000.

Kornblum, Saul S.: *See*—
Stoopak, Samuel B.; Kornblum, Saul S.; and Jacobs, Allen L., 4,366,145, Cl. 424-37.000.

Korosy, Louis B.; and Senatore, Peter J., to Pfizer Inc. Flue gas desulfurization process. 4,366,134, Cl. 423-243.000.

Kortan, William A.; and Nebrig, Donald A., to Intercole Bolling Corp. Ring former and cutoff. 4,365,492, Cl. 72-10.000.

Korte, Hans D.; and Muck, Gustav, to Degussa Aktiengesellschaft. Apparatus and process for the periodic cleaning-out of solids deposits from heat exchanger pipes. 4,366,003, Cl. 134-18.000.

Kortum, William M. Method and apparatus for inducing immunological and resistant response in mammary glands. 4,365,632, Cl. 128-303.00R.

Kos, Steven: *See*—
Westwood, William D.; Kos, Steven; and Willemsen, Herman W., 4,366,488, Cl. 346-74.300.

Kosinski, James J., to Eastman Kodak Company. Monitoring device with processing solution reservoirs. 4,366,225, Cl. 430-207.000.

Kotobuki & Co., Ltd.: *See*—
Kageyama, Hidehei; and Suzuki, Takahiko, 4,365,390, Cl. 24-11.00R.

Kotowski, Andreas F., to Scanray Corporation. X-Ray line scan system for use in baggage inspection. 4,366,382, Cl. 378-57.000.

Kovacs, Joseph. Vegetable slicer. 4,365,414, Cl. 30-310.000.

Kovalev, Gennady G.: *See*—
Karpov, Jury A.; Burylev, Boris P.; Glavin, German G.; Kvin, Valeria E.; Kovalev, Vasily V.; Natanson, Konstantin J.; Orlov, Vladimir V.; Kuznetsov, Lev B.; Zaitsev, Anatoly M.; Kartsev, Valentin E.; Morozov, Vladimir M.; and Kovalev, Gennady G., 4,365,969, Cl. 436-75.000.

Kovalev, Vasily V.: *See*—
Karpov, Jury A.; Burylev, Boris P.; Glavin, German G.; Kvin, Valeria E.; Kovalev, Vasily V.; Natanson, Konstantin J.; Orlov, Vladimir V.; Kuznetsov, Lev B.; Zaitsev, Anatoly M.; Kartsev, Valentin E.; Morozov, Vladimir M.; and Kovalev, Gennady G., 4,365,969, Cl. 436-75.000.

Kowal, Leonard. Chrominance subcarrier regeneration network. 4,366,451, Cl. 331-20.000.

Koyama, Yoshihiro: *See*—
Oguri, Ichiro; and Koyama, Yoshihiro, 4,366,005, Cl. 134-25.200.

Kozlovsky, Vladlen V.: *See*—
Brounshtein, Viktor B.; Petrov, Vladimir I.; Otsup, Rudolf R.; Ignatieva, Galina P.; Kozlovsky, Vladlen V.; Lipshits, Leonard Y.; Zhuravlev, Oleg V.; Koba, Mikhail G.; Seliverstov, Konstantin B.; Igisheva, Tamara A.; Drobyazko, Petr A.; Motin, Anatoly I.; Fot, Viktor D.; Yakimov, Lev T.; and Kuznetsov, Boris G., 4,366,124, Cl. 422-278.000.

Krabbenhoft, Herman O., to General Electric Company. Calcium-nickel phosphate catalyst. 4,366,089, Cl. 252-437.000.

Kraft, John H.: *See*—
Houle, Raymond T.; Redwine, Michael A.; Kilbourn, Fredrick A.; Reed, Stewart D.; Sills, Arthur A.; and Kraft, John H., 4,365,367, Cl. 4-555.000.

Kraftwerk Union AG: *See*—
Kuhnel, Roland; Bokelmann, Rainer; Scholz, Magnus; Gebke, Klaus; and Schuler, Mariana, 4,366,114, Cl. 376-272.000.

Kramer, Steven G. Reminder closure. 4,365,722, Cl. 215-220.000.

Kramer, Wolfgang; Timmler, Helmut; Buchel, Karl H.; Brandes, Wilhelm; Frohberger, Paul-Ernst; and Scheinpflug, Hans, to Bayer Aktiengesellschaft. Combatting fungi with metal salt complexes of 1-phenyl-2-(1,2,4-triazol-1-yl)-ethanes. 4,366,152, Cl. 424-245.000.

Krapf, Heinz: *See*—
Oppenlaender, Knut; Krapf, Heinz; and Lang, Siegfried, 4,366,151, Cl. 424-238.000.

Krasnokutsky, Jury B.: *See*—
Kurovich, Arkady N.; Krasnokutsky, Jury B.; Sysoev, Vyacheslav N.; Golman, Lev D.; Zuev, Vladimir T.; Nesterov, Viktor I.; and Laboda, Viktor A., 4,365,494, Cl. 72-63.000.

Kraus, Albert J.: *See*—
Jackson, William R.; Chambers, Edwin G.; Kraus, Albert J.; and Lerdon, Wesley E., 4,365,836, Cl. 297-85.000.

Krauss-Maffei Aktiengesellschaft: *See*—
Holzl, Emil, 4,365,505, Cl. 73-19.000.
Wohlrab, Walter, 4,365,645, Cl. 137-117.000.

Krauss, Rudolf: *See*—
Knapp, Heinrich; Sauer, Rudolf; Hans, Waldemar; Linssen, Mathias; Peczkowski, Jurgen; and Krauss, Rudolf, 4,365,747, Cl. 239-125.000.

Kregness, Glen R.; and Criswell, Peter B., to Sperry Corporation. Adder for exponent arithmetic. 4,366,548, Cl. 364-748.000.

Kreikenbohm, Robert: *See*—
Reusch, Heinz; and Kreikenbohm, Robert, 4,365,662, Cl. 165-10.000.

Kreyenbuhl, Armand, to Adidas Fabrique de Chaussures de Sport. Ski binding. 4,365,821, Cl. 280-615.000.

Kricka, Larry J.: *See*—
Bunce, Roger A.; Carter, Timothy J. N.; Kennedy, John H.; Kricka, Larry J.; and Whitehead, Thomas P., 4,366,118, Cl. 422-57.000.

Krihsnakumar, Suppayan M.: *See*—
Harry, Ieuan L.; Krihsnakumar, Suppayan M.; Jolly, Walter R.; and Beck, Martin H., 4,365,950, Cl. 425-534.000.

Krijgsman, Pieter, to Warrior Insulation Company B. V. System for forming a reaction product such as calcium silicate. 4,366,121, Cl. 422-110.000.

Krohn, Manfred: *See*—
Hartmann, Franz; and Krohn, Manfred, 4,365,387, Cl. 17-52.000.

Krome, Edward F., Jr., to Reliance Electric Company. Combination coupling and sheave. 4,365,964, Cl. 474-28.000.

Kronsbein, Dirk G. Filter. 4,366,054, Cl. 210-266.000.

Kruse, Robert W., to Gardner Bender, Inc. Automatic wire connector attaching apparatus. 4,365,527, Cl. 81-431.000.

Krywiczanin, Wladyslaw H.: *See*—
Naylor, Donald B.; and Krywiczanin, Wladyslaw H., 4,365,585, Cl. 118-302.000.

Krzes, Casey S. Battle type game and kit for construction thereof. 4,365,811, Cl. 273-238.000.

Kubert, Vincent T., to Harris Corporation. Automatic cylinder skewing apparatus. 4,365,552, Cl. 101-218.000.

Kubina, George: *See*—
Bugash, Eckhard; and Kubina, George, 4,365,617, Cl. 126-425.000.

Kubota, Shikibu; and Uriya, Yuichi, to Nissan Motor Co., Ltd. Shift lever mechanism of an automatic transmission. 4,365,522, Cl. 74-475.000.

Kuhar, Ludwig J., to Singer Company, The. Modified thread control lever for a bobbin case. 4,365,567, Cl. 112-184.000.

Kuhn, Eberhard: *See*—
Ahne, Hellmut; Kuhn, Eberhard; and Rubner, Roland, 4,366,230, Cl. 430-325.000.

Kuhn S.A.: *See*—
Werner, Anton; and Neuerburg, Horst, 4,365,462, Cl. 56-255.000.

Kuhnel, Roland; Bokelmann, Rainer; Scholz, Magnus; Gebke, Klaus; and Schuler, Mariana, to Kraftwerk Union AG. Dry storage for spent fuel assemblies. 4,366,114, Cl. 376-272.000.

Kuhner, Gerhard; Berndt, Wilhelm; Rothbuhr, Lothar; and Wagner, Hans, to Degussa Aktiengesellschaft. Process for the production of water containing carbon black preparations. 4,366,139, Cl. 423-449.000.

Kuhner, Gerhard: *See*—
Eisenmenger, Edith; Engel, Richard; Kuhner, Gerhard; Reck, Reinhold; Schaefer, Hans; and Voll, Manfred, 4,366,138, Cl. 423-445.000.

Kullman, Russell M. H.: *See*—
Graham, Clarence O., Jr.; Shepard, Charles L.; and Kullman, Russell M. H., 4,365,464, Cl. 57-12.000.

Kunii, Tadashi: *See*—
Amemiya, Akira; Kunii, Tadashi; Furusawa, Tomotaka; Takeda, Mutsuhiko; Tanaka, Katsumasa; Umemura, Toshikazu; Ono, Yoshihiro; Masumoto, Isamu; Nakao, Noriyasu; and Furukawa, Masanori, 4,366,305, Cl. 528-230.000.

Kunz, Raymond W.; and Walter, Henry J., to Clairol Incorporated. Telescoping electric hair curling iron with an integrally molded hair clip actuator. 4,366,365, Cl. 219-225.000.

Kurabayashi, Sadasuke: *See*—
Tsuda, Shin; Kurabayashi, Sadasuke; and Ogata, Minoru, 4,366,505, Cl. 358-260.000.

Kurasz, George W.: *See*—
Zavatkay, Robert J.; Kurasz, George W.; and Devaux, Robert R., 4,365,690, Cl. 185-45.000.

Kurihara, Fumio: *See*—
Abe, Mitsuo; Kamiya, Akira; Itoh, Junya; Mawatari, Masaaki; and Kurihara, Fumio, 4,366,281, Cl. 524-297.000.

Kurihara, Masaru; Watanabe, Tetsuo; and Inoue, Tetsuo, to Toray Industries, Inc. Reverse osmosis using a composite isocyanurate membrane. 4,366,062, Cl. 210-651.000.

Kurihara, Toshio; and Mizutani, Nagao, to Citizen Watch Co., Ltd. Printing mechanism for dot matrix printers. 4,365,550, Cl. 101-93.040.

Kurii, Masaaki: *See*—
Yamazoe, Hisamitsu; Kinugawa, Masumi; and Kurii, Masaaki, 4,365,601, Cl. 123-339.000.

Kuroda, Yoji: *See*—
Horiuchi, Takumi; Kuroda, Yoji; and Hukatsu, Kenji, 4,365,466, Cl. 57-205.000.

Kuroiwa, Hiroshi; and Sasayama, Takao, to Hitachi, Ltd. Electromechanical transducer controlling device. 4,366,524, Cl. 361-154.000.

Kurose, Morisumi: *See*—
Ejiri, Koichi; Kurose, Morisumi; and Maeda, Mamoru, 4,366,506, Cl. 358-260.000.

Kurovich, Arkady N.; Krasnokutsky, Jury B.; Sysoev, Vyacheslav N.; Golman, Lev D.; Zuev, Vladimir T.; Nesterov, Viktor I.; and Laboda, Viktor A. Hydraulic press elastic stamping tool. 4,365,494, Cl. 72-63.000.

Kurtz, Clark N.; Mir, Jose M.; and Varner, Jerry R., to Eastman Kodak Company. Electronic color imaging apparatus having integral multicolor arrays. 4,366,500, Cl. 358-75.000.

Kurz, Dieter, to Wacker-Chemie GmbH. Process and heavy metal catalyst for the polymerization of α-olefins, particularly polyethylene. 4,366,298, Cl. 526-125.000.

Kusakabe, Hiromi; and Nagumo, Masahide, to Tokyo Shibaura Denki Kabushiki Kaisha. Power-amplifying circuit. 4,366,448, Cl. 330-268.000.

Kuznetsov, Boris G.: *See*—
Brounshtein, Viktor B.; Petrov, Vladimir I.; Otsup, Rudolf R.; Ignatieva, Galina P.; Kozlovsky, Vladlen V.; Lipshits, Leonard Y.; Zhuravlev, Oleg V.; Koba, Mikhail G.; Seliverstov, Konstantin B.; Igisheva, Tamara A.; Drobyazko, Petr A.; Motin, Anatoly I.; Fot, Viktor D.; Yakimov, Lev T.; and Kuznetsov, Boris G., 4,366,124, Cl. 422-278.000.

Kuznetsov, Lev B.: *See*—
Karpov, Jury A.; Burylev, Boris P.; Glavin, German G.; Kvin, Valeria E.; Kovalev, Vasily V.; Natanson, Konstantin J.; Orlov, Vladimir V.; Kuznetsov, Lev B.; Zaitsev, Anatoly M.; Kartsev, Valentin E.; Morozov, Vladimir M.; and Kovalev, Gennady G., 4,365,969, Cl. 436-75.000.

Kvin, Valeria E.: *See*—
Karpov, Jury A.; Burylev, Boris P.; Glavin, German G.; Kvin, Valeria E.; Kovalev, Vasily V.; Natanson, Konstantin J.; Orlov, Vladimir V.; Kuznetsov, Lev B.; Zaitsev, Anatoly M.; Kartsev, Valentin E.; Morozov, Vladimir M.; and Kovalev, Gennady G., 4,365,969, Cl. 436-75.000.

Kyomasu, Mikio; Nakao, Yoshiharu; and Nakayama, Mitsuo, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor memory device. 4,366,556, Cl. 365-189.000.

L. D. Schreiber Cheese Co., Inc.: *See*—
Retzlaff, Wilfred F., 4,365,545, Cl. 99-459.000.

Lab Products, Inc.: *See*—
Ruggieri, Albert P.; Marinaccio, Frank J.; Campbell, Neil E.; Allen, Wayne; Moum, Stanley; Malatesta, Paul F.; Pietrowski, Joseph J.; and Schwartz, Leonard H., 4,365,590, Cl. 119-15.000.

Laboda, Viktor A.: *See*—
Kurovich, Arkady N.; Krasnokutsky, Jury B.; Sysoev, Vyacheslav N.; Golman, Lev D.; Zuev, Vladimir T.; Nesterov, Viktor I.; and Laboda, Viktor A., 4,365,494, Cl. 72-63.000.

Laboratoires Goella: *See*—
Pascal, Marc, 4,366,244, Cl. 435-11.000.

Lacey, David: *See*—
Gray, George W.; Lacey, David; Jenner, John A.; and Pellatt, Martin G., 4,366,330, Cl. 568-775.000.

Lagoven, S.A.: *See*—
Johannson, Johannes, 4,365,781, Cl. 249-11.000.

Laidig, Manfred R., to Singer Company, The. Switch pattern selection and informational display arrangement for a multiple pattern sewing machine. 4,365,566, Cl. 112-158.00F.

Lalonde, Maurice. Method for the isolation of symbiotic microorganisms from host plants using an osmium tetraoxide fixative. 4,366,245, Cl. 435-30.000.

Lampe, Donald R., to Westinghouse Electric Corp. Monolithic sequential processor for four-quadrant multiplier arrays. 4,366,550, Cl. 364-844.000.

Lamprell, Trevor: *See*—
Parkinson, William B.; and Lamprell, Trevor, 4,365,834, Cl. 294-85.000.

Land, Edwin H., to Polaroid Corporation. Photosensitive element and method of preparing same. 4,366,235, Cl. 430-496.000.

Landau, Julian I.: *See*—
Papanek, Thomas H.; Egler, Mark S.; and Landau, Julian I., 4,366,061, Cl. 210-647.000.

Landymore, Barry W.: *See*—
Wills, David R.; Green, Ralph E.; and Landymore, Barry W., 4,365,591, Cl. 119-82.000.

Lang, Gunter: *See*—
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Lang, Siegfried: *See*—
Oppenlaender, Knut; Krapf, Heinz; and Lang, Siegfried, 4,366,151, Cl. 424-238.000.

Lange, Gerhard; Sippekamp, Oskar; and Schwenda, Gerhard, to Siemens Aktiengesellschaft. Surge arrester with parallel-connected improved spark gap structure. 4,366,412, Cl. 313-325.000.

Langen, Hans: *See*—
Ohlschlager, Hans; and Langen, Hans, 4,366,221, Cl. 430-507.000.

Langer, Manfred; Burfeindt, Heinz; and Stuart, Patrick, to Volkswagenwerk Aktienbesellschaft. Axial vane ring consisting of ceramic materials for gas turbines. 4,365,933, Cl. 415-217.000.

Langer, Manfred: *See*—
Knorre, Helmut; Langer, Manfred; Fauser, Friedrich; and Fischer, Willi, 4,366,049, Cl. 208-179.000.

Langgard, Sixten; and Larsson, Lennart. Device at heating or cooling unit. 4,365,482, Cl. 62-149.000.

Langston, Jack W.: *See*—
Craig, Gary W.; and Langston, Jack W., 4,365,692, Cl. 187-8.720.

Lankard, David R., to Wahl Refractory Products, Company. Highly reinforced refractory concrete with 4-20 volume % steel fibers. 4,366,255, Cl. 501-95.000.

Larson, Gerald W. Process of forming permanent optical lamination of color proofs. 4,366,223, Cl. 430-143.000.

Larson, Lynn D. Water bed mattress. 4,365,370, Cl. 5-451.000.

Larsson, Lennart: *See*—
Langgard, Sixten; and Larsson, Lennart, 4,365,482, Cl. 62-149.000.

Larsson, Ralf: *See*—
Kohler, Karl-Axel; Collin, Rolf; and Larsson, Ralf, 4,366,182, Cl. 426-644.000.

Lash, Ronald J.; and Herr, Roy W., to Occidental Chemical Corporation. Additive and alkaline zinc electroplating bath and process using same. 4,366,036, Cl. 204-55.00R.

Lask, Gert-Wilhelm, to International Minerals & Chemical Luxembourg Societe Anonyme. Process for producing silicon. 4,366,137, Cl. 423-350.000.

Lassig, Wolfgang; Meier, Ernst; and Schleger, Siegfried, to Agfa-Gevaert Aktiengesellschaft. Color photographic recording material containing non-diffusing electron donor precursor compounds. 4,366,240, Cl. 430-542.000.

Latimer, John P., to Deepsea Ventures, Inc. Pipe string lift system. 4,365,787, Cl. 254-106.000.

Lauro, Fernand, to Commissariat a l'Energie Atomique. Device for distillation or concentration of a solution and more particularly for desalination of a saline solution such as sea water. 4,366,027, Cl. 202-174.000.

Lawrence, Paul J.; and Townsley, Charles W., to SmithKline Instruments, Inc. Specimen test slide and method for testing occult blood. 4,365,970, Cl. 436-66.000.

Le Materiel Telephonique Thomson-CSF: *See*—
Broussaud, Georges J. G., 4,365,863, Cl. 350-96.150.

Le Berre, Serge: *See*—
Hareng, Michel; and Le Berre, Serge, 4,365,869, Cl. 350-345.000.

Lednicer, Daniel, to Upjohn Company, The. 4-Amino-cyclohexanols, their pharmaceutical compositions and methods of use. 4,366,172, Cl. 424-330.000.

Leduc, Alain: *See*—
Caurant, Robert; and Leduc, Alain, 4,365,959, Cl. 434-24.000.

Lee, Ernest O.; Smith, Wayne G.; and Hanson, George C., to Stromberg-Carlson Corporation. Control system for telephone switching system. 4,366,350, Cl. 179-175.20C.

Lee, Jeffrey A.: *See*—
Todd, Mike J.; and Lee, Jeffrey A., 4,365,377, Cl. 15-98.000.

Leifeld, Ferdinand: *See*—
Beneke, Wolfgang; and Leifeld, Ferdinand, 4,365,389, Cl. 19-200.000.
Leiser, Roger S.; and Liaw, Gin C., to A. E. Staley Manufacturing Company. Process and equipment for chromatographic separation of fructose/dextrose solutions. 4,366,060, Cl. 210-635.000.
Lenardson, Donald D., to J. J. Mauget Co. Leakage resistant container for plant injection apparatus. 4,365,440, Cl. 47-57.500.
Lened, Inc.: *See*—
Palmer, Leonard; and Palmer, Jack A., 4,365,458, Cl. 53-449.000.
Le Pennec, Dominique; Commereuc, Dominique; and Chauvin, Yves, to Institut Francais du Petrole. Oligomerization catalyst and process. 4,366,087, Cl. 252-431.00C.
Lerdon, Wesley E.: *See*—
Jackson, William R.; Chambers, Edwin G.; Kraus, Albert J.; and Lerdon, Wesley E., 4,365,836, Cl. 297-85.000.
Le Roy, Patrice M.; and Pattein, Jacky P., to Societe Nationale des Poudres et Explosifs. Crosslinkable thermoplastic polyurethane resins containing ethylenic side groups. 4,366,301, Cl. 528-66.000.
Les Entreprises Rotot Ltee: *See*—
Thiboutot, Robert, 4,365,908, Cl. 403-102.000.
Lesher, George Y.; and Singh, Baldev, to Sterling Drug Inc. Process for preparing 5-(pyridinyl)benzoxazol-2(3H)-ones. 4,366,319, Cl. 546-270.000.
Leslie, Colin M.; Watson, James H. P.; and Williams, John A., to British Nuclear Fuels Limited. Separating particles from a liquid. 4,366,065, Cl. 210-695.000.
Leslie, Stewart T., to Euroceltique, S.A. Controlled release compositions. 4,366,310, Cl. 536-56.000.
Lester, Thomas R. Combination gauze package and gauze sponge dispenser. 4,365,709, Cl. 206-362.000.
Letraset Limited: *See*—
Horton, David, 4,365,551, Cl. 101-124.000.
Le Van Mao, Raymond; Pilati, Orlando; Moretti, Enrico; Covini, Romano; and Genoni, Fausto, to Montedison S.p.A. Method for preparing zeolites. 4,366,135, Cl. 423-329.000.
Leveque, Jean-Luc M.; and Abrioux, Andre H., to L'Oreal. Apparatus for ascertaining the firmness of tissue. 4,365,638, Cl. 128-774.000.
Lever Brothers Company: *See*—
Altrock, Werner W. L.; and Ritums, Janis A., 4,366,180, Cl. 426-602.000.
Dijkshoorn, Willem; Huizinga, Hindrik; and Pronk, Jacobus N., 4,366,181, Cl. 426-603.000.
Levine, Carl. System for monitoring tennis court boundary lines. 4,365,805, Cl. 273-31.000.
Levine, Walter E.; and Heath, Allan B., to Acheson Industries, Inc. Spray assembly construction. 4,365,754, Cl. 239-412.000.
Leybold-Heraeus GmbH: *See*—
Knorre, Helmut; Langer, Manfred; Fauser, Friedrich; and Fischer, Willi, 4,366,049, Cl. 208-179.000.
Pajonk, Heinz; Hohne, Franz; and Ruthardt, Rolf, 4,365,944, Cl. 425-7.000.
Leyendecker, Gustave, to Hoilleres du Bassin de Larraine. Process for the production of coke or semicoke. 4,366,026, Cl. 201-1.000.
Liautaud, James P., to Liautaud, James P. Honeycomb framework system for drop ceilings. 4,365,449, Cl. 52-28.000.
Liaw, Gin C.: *See*—
Leiser, Roger S.; and Liaw, Gin C., 4,366,060, Cl. 210-635.000.
Lifting Gear Hire Limited: *See*—
Parkinson, William B.; and Lamprell, Trevor, 4,365,834, Cl. 294-85.000.
Lijoi, Bruno; Cirrito, Vincent; and Edelstein, Fred, to Grumman Aerospace Corporation. Heat-pipe cooled electronic circuit card. 4,366,526, Cl. 361-385.000.
Lin, Jiang-Jen: *See*—
Knifton, John F.; and Lin, Jiang-Jen, 4,366,259, Cl. 518-700.000.
Lindauer Dornier Gesellschaft mbH.: *See*—
Dornier, Peter; and Windischbauer, Florian, 4,365,650, Cl. 139-1.00R.
Linden, Gary L.; and Kathiriya, Shiraz A., to Ashland Oil, Inc. Catechol-based vapor permeation curable coating compositions. 4,366,193, Cl. 427-340.000.
Lindholm, Alfons S. M., to Magnusson, Rolf, a part interest. Sealing device. 4,366,214, Cl. 429-140.000.
Lindler, Carl, to Descal-A-Matic Corporation. Magnetic liquid treating device. 4,366,053, Cl. 210-222.000.
Linssen, Mathias: *See*—
Knapp, Heinrich; Sauer, Rudolf; Hans, Waldemar; Linssen, Mathias; Peczkowski, Jurgen; and Krauss, Rudolf, 4,365,747, Cl. 239-125.000.
Lippler, Remy R.; Mengelle, Andre J.; and Plazanet, Jacques, to Societe Nationale des Poudres et Explosifs. Combustible objects, in particular combustible cartridge cases, which are heat-resistant. 4,365,558, Cl. 102-431.000.
Lipshits, Leonard Y.: *See*—
Brounshtein, Viktor B.; Petrov, Vladimir I.; Otsup, Rudolf R.; Ignatieva, Galina P.; Kozlovsky, Vladlen V.; Lipshits, Leonard Y.; Zhuravlev, Oleg V.; Koba, Mikhail G.; Seliverstov, Konstantin B.; Igisheva, Tamara A.; Drobyazko, Petr A.; Motin, Anatoly I.; Fot, Viktor D.; Yakimov, Lev T.; and Kuznetsov, I[illegible]G., 4,366,124, Cl. 422-278.000.
Liptak, Ferenc: *See*—
Alajos, Dobos; Kiss, Gyula; Gaspar, Bela; Imre, Geza; Jony nee Acs, Julia; Forian, Istvan; Ijjas, Istvan; Liptak, Ferenc; and Bisits nee Zsilinszky, Vilma, 4,365,757, Cl. 239-567.000.
Liptak, Laszlo: *See*—
Takats, Ferenc; Lorand, Ferenc; Pajer, Imre; and Liptak, Laszlo, 4,366,095, Cl. 252-633.000.
Liquid Carbonic Corporation: *See*—
Reynolds, Martin M.; and Young-Bandala, Linda, 4,366,178, Cl. 426-393.000.
List, Hans: *See*—
Marsoner, Hermann; and Ritter, Christoph, 4,366,040, Cl. 204-195.00R.
Obermayer, Bertram; Skatsche, Othmar; and Greier, Josef, 4,365,594, Cl. 123-41.82R.
Pomfret, Colin T., 4,365,593, Cl. 123-41.320.
Litynski, Zbigniew. Toy laser-type gun. 4,365,439, Cl. 46-227.000.
Liu, Yi-Tsung: *See*—
Ganguly, Ashit K.; Liu, Yi-Tsung; Sarre, Olga; Jaret, Robert; and Schumacher, Doris P., 4,366,309, Cl. 536-7.100.
Lockey, David J.: *See*—
d'Alayer de Costemore d'Arc, Stephane M.; and Lockey, David J., 4,366,371, Cl. 235-92.0MP.
Loewenstein, Paul, to Enertec. Identification of electric power network phases experiencing disturbances. 4,366,474, Cl. 340-658.000.
Loffland Brothers Company: *See*—
Craig, Gary W.; and Langston, Jack W., 4,365,692, Cl. 187-8.720.
Loftus, Peter J., to Brandt, Inc. Limpness detector for documents and the like. 4,365,508, Cl. 73-159.000.
Lombard, Claude, to Regie Nationale des Usines Renault. Device for measuring the amount of oxygen in combustion gases. 4,366,437, Cl. 324-464.000.
Long, Jerry M.; and Womack, James A. Video cassette storage and shipping container apparatus. 4,365,711, Cl. 206-387.000.
Long, Olen R., to Otis Engineering Corporation. Well system. 4,365,671, Cl. 166-318.000.
Lorand, Ferenc: *See*—
Takats, Ferenc; Lorand, Ferenc; Pajer, Imre; and Liptak, Laszlo, 4,366,095, Cl. 252-633.000.
Lord Corporation: *See*—
Auerbach, Robert A.; and Boenig, Herman V., 4,366,184, Cl. 427-41.000.
Gounder, Raj N.; and Geary, John T., 4,366,302, Cl. 528-99.000.
L'Oreal: *See*—
Leveque, Jean-Luc M.; and Abrioux, Andre H., 4,365,638, Cl. 128-774.000.
Lorenz, Donald H.: *See*—
Williams, Earl P.; and Lorenz, Donald H., 4,366,294, Cl. 525-327.600.
Lorenz, Hans-Walther; and Schumacher, Gerd, to B.A.T. Cigaretten-Fabriken GmbH. Equipment for smoking smokable objects. 4,365,640, Cl. 131-330.000.
Losciale, Francesco: *See*—
Alessandrini, Paolo; De Angelis, Lucio; Galluzzi, Fabrizio; Losciale, Francesco; and Scafe', Ernesto, 4,366,337, Cl. 136-258.000.
Loughman, James; Daly, Christopher N.; and Washington, Ronald A. C., to Telectronics Pty. Ltd. Patient-operated pacemaker programmer. 4,365,633, Cl. 128-419.0PG.
Lowe, Colin F. Frameless metal building and building components. 4,365,453, Cl. 52-478.000.
Lowery, John L. Hinge door assemblie. 4,365,386, Cl. 16-382.000.
Lubbers, Benso, to Colu Industriez, Inc. Combination trailer/launcher for boats and other vehicles, and methods of constructing and utilizing same. 4,365,923, Cl. 414-483.000.
Lucas Industries Limited: *See*—
Allen, Brian R., 4,366,361, Cl. 219-78.010.
Rath, Heinrich B., 4,365,695, Cl. 188-73.390.
Seilly, Alec H., 4,366,401, Cl. 310-12.000.
Skinner, Robert T. J., 4,365,939, Cl. 417-221.000.
Luce, David A.: *See*—
Clark, Melville, Jr.; and Luce, David A., 4,365,533, Cl. 84-1.240.
Luddington, Eric A.: *See*—
Hinchcliffe, Dennis; and Luddington, Eric A., 4,365,703, Cl. 198-347.000.
Ludwig Riedhammer GmbH & Co. KG: *See*—
Petzi, Fritz, 4,365,954, Cl. 432-198.000.
Luft, Gunter: *See*—
Richter, Gerhard; Luft, Gunter; and Gebhardt, Ulrich, 4,366,033, Cl. 204-1.00T.
Lui, Charles: *See*—
Mitsopoulos, Tom; Jhaveri, Satish; and Lui, Charles, 4,366,266, Cl. 523-143.000.
Luk Lamellen und Kupplungsbau GmbH: *See*—
Honemann, Rudolf, 4,365,697, Cl. 192-89.00B.
Lukaschek, Wolfgang; and Marx, Wolfgang, to Chemische Werke Huls, A.G. Process for the production of an elastomer-filler mixture optionally containing extender oils. 4,366,285, Cl. 524-521.000.
Luke Limited: *See*—
Dobney, William E., 4,365,487, Cl. 62-498.000.
Lutz, Horst, to Daimler-Benz Aktiengesellschaft. Apparatus for preventing unauthorized starting of a motor vehicle. 4,366,466, Cl. 340-64.000.
Lyashenko, Ivan V.: *See*—
Chukhanov, Zinovy F.; Chukhanov, Zinovy Z.; Tsuprov, Sergei A.; Lyashenko, Ivan V.; Apter, Danil M.; Nikolaev, Anatoly M.; and Karasev, Vadim A., 4,366,043, Cl. 208-8.00R.
Lynch, Karen: *See*—
DeBonte, William J.; and Lynch, Karen, 4,366,490, Cl. 346-140.00R.

M. A. Industries, Inc.: *See*—
Williams, Craig B., 4,365,780, Cl. 249-11.000.
M.A.N.-Roland Druckmaschinen Aktiengesellschaft: *See*—
Fischer, Hermann; and Schubert, Johannes M., 4,365,553, Cl. 101-232.000.
Ma, Bao-Min: *See*—
Finke, Guenter B.; and Ma, Bao-Min, 4,366,520, Cl. 361-45.000.
Maass, Donald A.: *See*—
Keskkula, Henno; Maass, Donald A.; and McCreedy, Kathleen M., 4,366,289, Cl. 525-78.000.
MacKinnon, Alan G., to Foundation Equipment Company. Pile driving assembly. 4,365,675, Cl. 173-105.000.
Madi, Jeno: *See*—
Ratsko, Istvan; Ivony, Jozsef; Madi, Jeno; and Karaszi, Gyorgy, 4,365,685, Cl. 180-135.000.
Maeda, Mamoru: *See*—
Ejiri, Koichi; Kurose, Morisumi; and Maeda, Mamoru, 4,366,506, Cl. 358-260.000.
Maekawa, Tadashi; and Watanabe, Yutaka. Plastic molding strip. 4,366,196, Cl. 428-31.000.
Maestrelli, Gino, to Maestrelli S.p.A. Cleaning liquid level regulator for dry cleaning machines. 4,365,489, Cl. 68-212.000.
Maestrelli S.p.A.: *See*—
Maestrelli, Gino, 4,365,489, Cl. 68-212.000.
Mag Maschinen und Apparatebau Gesellschaft mbH: *See*—
Horvath, Miklos; and Pichler, Hans-Peter, 4,365,790, Cl. 266-103.000.
Magenheimer, John J.: *See*—
Berger, Michael; and Magenheimer, John J., 4,366,227, Cl. 430-215.000.
Maggioni, Virginio, to Centro Ricerche Fiat S.p.A. Automatic timer valve for controlling the output of irrigation plant. 4,365,644, Cl. 137-102.000.
Magnetic Metals Corporation: *See*—
Finke, Guenter B.; and Ma, Bao-Min, 4,366,520, Cl. 361-45.000.
Magnuson, Richard C.: *See*—
Kehl, Norman J.; and Magnuson, Richard C., 4,365,840, Cl. 297-443.000.
Magnusson, Rolf: *See*—
Lindholm, Alfons S. M., 4,366,214, Cl. 429-140.000.
Magruder, Michael R., to Magruder, Michael Richard. Nalbuphine-narcotic analgesic composition and method of producing analgesia. 4,366,159, Cl. 424-260.000.
Magruder, Michael Richard: *See*—
Magruder, Michael R., 4,366,159, Cl. 424-260.000.
Mahrus, Duraid, to Metal Leve S.A. Industria e Comercio. Manufacture of light weight pistons. 4,365,399, Cl. 29-156.50R.
Main, David T.; Riddle, John B.; and Allen, Rod H., to Micro Magnetic Industries, Inc. Vending machine acquisition system. 4,366,481, Cl. 340-825.540.
Mak, Tak W.: *See*—
Andrew, Barry E.; and Mak, Tak W., 4,366,077, Cl. 252-49.300.
Makino, Kenya; Sakurai, Hideo; Watanabe, Masaru; and Nishimura, Toshiyuki, to Japan EP Rubber Co., Ltd. Process for producing olefinic copolymer rubber with improved titanium compound containing catalyst system. 4,366,297, Cl. 526-119.000.
Malatesta, Paul F.: *See*—
Ruggieri, Albert P.; Marinaccio, Frank J.; Campbell, Neil E.; Allen, Wayne; Moum, Stanley; Malatesta, Paul F.; Pietrowski, Joseph J.; and Schwartz, Leonard H., 4,365,590, Cl. 119-15.000.
Mank, James F.: *See*—
Doerschuk, David C.; and Mank, James F., 4,365,351, Cl. 2-2.10R.
Mannes, Karl: *See*—
Rauchschwalbe, Gunter; Blank, Heinz U.; Mannes, Karl; and Mayer, Dietmar, 4,366,102, Cl. 260-463.000.
Manzoni, Stephane. Locking device for use on suitcases. 4,365,490, Cl. 70-70.000.
Mapco, Inc.: *See*—
Zacharias, Ellis M., Jr., 4,365,518, Cl. 73-861.310.
Mard, Kenneth C.; and Washburn, S. John, to United Technologies Corp. Fixed position variable frequency pendular-type vibration absorber. 4,365,770, Cl. 244-17.110.
Margiloff, Henry. Traffic signaling attachment device for bicycles. 4,365,581, Cl. 116-52.000.
Marinaccio, Frank J.: *See*—
Ruggieri, Albert P.; Marinaccio, Frank J.; Campbell, Neil E.; Allen, Wayne; Moum, Stanley; Malatesta, Paul F.; Pietrowski, Joseph J.; and Schwartz, Leonard H., 4,365,590, Cl. 119-15.000.
Mark, Edward H. Storage facility such as a file having a flexible rotatable cover. 4,365,855, Cl. 312-297.000.
Marks, Kenneth A.: *See*—
Gaylord, John A.; and Marks, Kenneth A., 4,365,776, Cl. 244-151.00A.
Marques, Jerry G.; and Cruthis, Robert D., to Caterpillar Tractor Co. Filter arrangement for an air circulatory system. 4,365,541, Cl. 98-2.110.
Marsden, Warwick L.: *See*—
Wainwright, Mark S.; Marsden, Warwick L.; and Friedrich, Jan B., 4,366,260, Cl. 518-713.000.
Marsh, Edward K., to Bendix Corporation, The. Method of making an electrical connector assembly. 4,365,412, Cl. 29-863.000.
Marsoner, Gunter, to U. S. Philips Corporation. Cylindrical capacitive tachogenerator. 4,366,402, Cl. 310-68.00B.
Marsoner, Hermann; and Ritter, Christoph. to List, Hans. Capillary-reference electrode. 4,366,040, Cl. 204-195.00R.
Martin, Brice E.; and Schwartz, Alan R., to GTE Products Corporation. Treatment of coarse particle size zinc sulfide to improve visual and infrared transmission on hot-pressed articles. 4,366,141, Cl. 423-561.00B.
Martin, Eugene J.; and Rollins, Thomas, to Pneumo Corporation. Fluid pressure actuator with stroke end lock mechanism. 4,365,539, Cl. 92-17.000.
Martin, Henri, to Societe Nationale Industrielle Aerospatiale. Process and device for braking a wheel by integrated pressure pulses. 4,365,847, Cl. 303-93.000.
Martin-Smith, Michael: *See*—
Clitherow, John W.; Price, Barry; Bradshaw, John; and Martin-Smith, Michael, 4,366,164, Cl. 424-267.000.
Martinengo, Giorgio: *See*—
Cedolin, Riccardo; Chiarottino, Wolmer; Giandonato, Giuseppe; Giorcelli, Silvano; Martinengo, Giorgio; Sofi, Giorgio; and Villone, Sergio, 4,366,535, Cl. 364-200.000.
Martini, Leonard J. Game board and apparatus. 4,365,812, Cl. 273-243.000.
Marumoto, Katsuji: *See*—
Omae, Tsutomu; Marumoto, Katsuji; and Naito, Shotaro, 4,366,420, Cl. 318-338.000.
Maruyama, Teruo; and Morimoto, Masato, to Matsushita Electric Industrial Co., Ltd. Rotary head assembly for videotape recorder or reproducer. 4,366,519, Cl. 360-129.000.
Marvia, Kaarlo, to Suomen Sokeri Osakeyhtio. Container for loose material. 4,365,737, Cl. 229-17.00R.
Marx, Hans-Jurgen, to Trutzschler GmbH & Co. KG. Suction apparatus for removing fiber material. 4,365,764, Cl. 241-101.00A.
Marx, Wolfgang: *See*—
Lukaschek, Wolfgang; and Marx, Wolfgang, 4,366,285, Cl. 524-521.000.
Maryland Cup Corporation: *See*—
Cress, Allan K.; and Busse, Charles E., 4,365,460, Cl. 53-563.000.
Masclet, Jean; and Papay, Roger, to Messier-Hispano-Bugatti. Fuse device for a wheel equipped with a pneumatic tire. 4,365,643, Cl. 137-70.000.
Mason, H. Carl. Wind machine. 4,365,934, Cl. 416-17.000.
Mason, James L.: *See*—
Palermo, Michael A.; and Mason, James L., 4,365,723, Cl. 220-3.800.
Masonite Corporation: *See*—
Hanlon, Charles M.; Mein, James H.; and Schultz, William J., 4,366,197, Cl. 428-43.000.
Massachusetts Institute of Technology: *See*—
Turner, George W.; Fan, John C. C.; and Salerno, Jack P., 4,366,338, Cl. 136-258.000.
Masters, Ian M.: *See*—
Weir, Donald R.; and Masters, Ian M., 4,366,128, Cl. 423-87.000.
Masuda, Ikuro; Shiraishi, Hisayoshi; Ogawa, Seiichiro; Shiono, Shigeo; Sakurai, Jinichi; and Yuminaka, Takeo, to Hitachi, Ltd. Signal transmitting and receiving apparatus. 4,366,478, Cl. 340-825.000.
Masuda, Kouji: *See*—
Kitamura, Nobuaki; Masuda, Kouji; and Mizukami, Masao, 4,366,397, Cl. 307-264.000.
Masuda, Toyohiko; Ueno, Takeshi; Nagai, Yoji; Ishimaru, Hitoshi; and Nakamura, Shozo, to Hitachi Ltd.; and Hitachi Engineering Co. Ltd. Condensation system for power plant. 4,365,476, Cl. 60-686.000.
Masugi, Takashi: *See*—
Takaya, Takao; Masugi, Takashi; Takasugi, Hisashi; and Kochi, Hiromu, 4,366,153, Cl. 424-246.000.
Masumoto, Isamu: *See*—
Amemiya, Akira; Kunii, Tadashi; Furusawa, Tomotaka; Takeda, Mutsuhiko; Tanaka, Katsumasa; Umemura, Toshikazu; Ono, Yoshihiro; Masumoto, Isamu; Nakao, Noriyasu; and Furukawa, Masanori, 4,366,305, Cl. 528-230.000.
Matsumoto, Koichi: *See*—
Hazama, Kiyoaki; Shiozawa, Kazuo; and Matsumoto, Koichi, 4,365,881, Cl. 354-76.000.
Matsumoto, Shoichi: *See*—
Mizunoya, Kiyoshi; Matsumoto, Shoichi; Tomii, Hitoshi; Kawamoto, Masahiro; and Wada, Yuusuke. 4,366,080, Cl. 252-299.300.
Matsumoto, Tadayuki; Imaeda, Kozo; Mineo, Masatoshi; and Nakagawa, Kiyoshi, to Toray Industries, Inc. Method for producing an interlaced multifilament yarn. 4,365,394, Cl. 28-258.000.
Matsuno, Takashi: *See*—
Mori, Takashi; Takaku, Sakae; Matsuura, Fumiaki; Murakami, Yasushi; Noda, Yukifumi; Yamazaki, Tamotsu; Neichi, Tomohiro; Nakakimura, Hiroshi; Kataoka, Shigeyuki; Matsuno, Takashi; Hata, Shun-ichi; and Takanashi, Shigeru, 4,366,161, Cl. 424-266.000.
Matsuoka, Kikuo: *See*—
Hirota, Kazumi; and Matsuoka, Kikuo, 4,365,498, Cl. 72-351.000.
Hirota, Kazumi; and Matsuoka, Kikuo, 4,365,499, Cl. 72-351.000.
Matsushita Electric Industrial Co., Ltd.: *See*—
Maruyama, Teruo; and Morimoto, Masato, 4,366,519, Cl. 360-129.000.
Ohmukai, Yoshimi; Ogino, Toshiro; Adachi, Kinichi; and Nishiguchi, Hisanori, 4,365,952, Cl. 431-208.000.
Shimizu, Hirokazu; Itoh, Kunio; Sugino, Takashi; and Wada, Masaru, 4,366,568, Cl. 372-45.000.
Terakawa, Sumio; Takamura, Tohru; Horii, Kenju; and Yamada, Takahiro, 4,366,503, Cl. 358-213.000.
Matsushita Electric Works, Ltd.: *See*—
Inoue, Hiromitsu; Ohashi, Hiroshi; and Takada, Yuji, 4,366,473, Cl. 340-562.000.

Oda, Takeshi; Tanabe, Toshio; and Tanaka, Yoshimasa, 4,365,376, Cl. 15-22.00R.

Matsushita Electronics Corp.: *See*—
Terakawa, Sumio; Takamura, Tohru; Horii, Kenju; and Yamada, Takahiro, 4,366,503, Cl. 358-213.000.

Matsushita, Yuichi: *See*—
Takano, Masayuki; Hosoi, Sadao; and Matsushita, Yuichi, 4,366,515, Cl. 360-77.000.

Matsuura, Fumiaki: *See*—
Mori, Takashi; Takaku, Sakae; Matsuura, Fumiaki; Murakami, Yasushi; Noda, Yukifumi; Yamazaki, Tamotsu; Neichi, Tomohiro; Nakakimura, Hiroshi; Kataoka, Shigeyuki; Matsuno, Takashi; Hata, Shun-ichi; and Takanashi, Shigeru, 4,366,161, Cl. 424-266.000.

Matsuzaki, Atsushi: *See*—
Hatada, Toshio; Senshu, Takao; Arai, Akira; Harada, Fumio; Matsuzaki, Atsushi; Futawatari, Hajime; Imaizumi, Yutaka; and Takeda, Sumiyoshi, 4,365,667, Cl. 165-152.000.

Matthews, John A.; Washburn, David A.; and Sarli, Vito J., to United Technologies Corporation. Fuel nozzle guide and seal for a gas turbine engine. 4,365,470, Cl. 60-39.320.

Mauri Brothers & Thomson (Aust) Pty. Limited: *See*—
Parker, Bernard J., 4,366,173, Cl. 426-20.000.

Mawatari, Masaaki: *See*—
Abe, Mitsuo; Kamiya, Akira; Itoh, Junya; Mawatari, Masaaki; and Kurihara, Fumio, 4,366,281, Cl. 524-297.000.

Max Sandherr AG: *See*—
Schellenberg, Walter, 4,365,457, Cl. 53-412.000.

May, Sherman C.: *See*—
Rogers, Alfred N.; Awerbuch, Leon; and May, Sherman C., 4,366,066, Cl. 210-696.000.

Mayama, Shinji; and Arai, Yoji, to Hitachi, Ltd. Spectral source, particularly for atomic absorption spectrometry. 4,366,418, Cl. 315-326.000.

Mayer, Dietmar: *See*—
Rauchschwalbe, Gunter; Blank, Heinz U.; Mannes, Karl; and Mayer, Dietmar, 4,366,102, Cl. 260-463.000.

Mayer, Hildegard E., Annedore Mayer, Andrea Mayer, heirs: *See*—
Mayer, Karl H., deceased; Sasse, Klaus; and von Konig, Anita, 4,366,231, Cl. 430-375.000.

Mayer, Karl H., deceased (by Mayer, Hildegard E., Annedore Mayer, Andrea Mayer, heirs); Sasse, Klaus; and von Konig, Anita, to Agfa Gevaert Aktiengesellschaft. Photographic material containing a stabilizer, a process for its production, a development process, new pyrazoles, a process for their production and intermediate products. 4,366,231, Cl. 430-375.000.

Mazzucco, Daniel, to Terraillon, Terson; and Terraillon, Marc. Electric fabric steaming appliance with prevention of water refill through the steam discharge outlet. 4,366,367, Cl. 219-272.000.

MB-80 Energy Corporation: *See*—
McGinness, John E., 4,366,216, Cl. 429-213.000.

MBK Maschinenbau GmbH: *See*—
Pfender, Georg, 4,365,657, Cl. 140-112.000.

McArthur, Dennis P.: *See*—
Baron, Kenneth; and McArthur, Dennis P., 4,366,083, Cl. 252-416.000.

McCartney, John, to Norwood Industries, Inc. Thermal coagulation of polyurethane dispersions. 4,366,192, Cl. 427-246.000.

McCauley, John W.; and Paul, Stephen. Foldable viewer. 4,365,432, Cl. 40-365.000.

McClure, George W., Jr., to Formica Corporation. Method and apparatus for controlling a press. 4,365,547, Cl. 100-38.000.

McCombs, Russell L.; and Motsinger, James V., to Baker International Corporation. Method for counting turns when making threaded joints. 4,365,402, Cl. 29-407.000.

McCoy, Robert J.: *See*—
Keramidas, Vassilis G.; McCoy, Robert J.; and Temkin, Henryk, 4,366,186, Cl. 427-89.000.

McCrary, Avis L.: *See*—
Tyler, Manuel C., Jr.; and McCrary, Avis L., 4,366,295, Cl. 525-482.000.

McCreedy, Kathleen M.: *See*—
Keskkula, Henno; Maass, Donald A.; and McCreedy, Kathleen M., 4,366,289, Cl. 525-78.000.

McCroskery, Allan L.: *See*—
Bevilaqua, Ernest M.; McCroskery, Allan L.; and Knerr, Theodore N., 4,365,691, Cl. 187-1.00R.

McDermott, Mark W.; and Feldman, Neil B., to Motorola, Inc. Power down detector. 4,366,560, Cl. 365-228.000.

McDonnell Douglas Corporation: *See*—
Notthoff, Johannes K.; and Zuleeg, Rainer, 4,366,377, Cl. 250-211.00J.

McDonough, John B., to Mine Safety Appliances Company. Gas filter. 4,365,981, Cl. 55-497.000.

McFarlane, Richard H. Flashback chamber for catheter. 4,365,630, Cl. 128-214.400.

McGinness, John E., to MB-80 Energy Corporation. Electrical energy storage. 4,366,216, Cl. 429-213.000.

McGinty, John J. Rodent repelling device. 4,366,562, Cl. 367-139.000.

McGreavy, Gerald: *See*—
Riley, David J.; and McGreavy, Gerald, 4,365,409, Cl. 29-623.200.

McKechnie, Robert E. Method and apparatus for programming and operating a machine tool. 4,366,424, Cl. 318-568.000.

McLaughlin, Bruce I., to Scranton Manufacturing Co., Inc. Gravity dump wagon. 4,365,841, Cl. 298-27.000.

McLaughlin, Homer C., to Halliburton Company. Methods of forming isocyanate polymers for earth-sealing operations. 4,365,670, Cl. 166-295.000.

McLaughlin, Homer C.; and Weaver, Jimmie D., to Halliburton Company. Oil well treating method and composition. 4,366,071, Cl. 252-8.55R.

McLaughlin, Homer C.; and Weaver, Jimmie D., to Halliburton Company. Oil well treating method and composition. 4,366,072, Cl. 252-8.55R.

McLaughlin, Homer C.; and Weaver, Jimmie D., to Halliburton Company. Oil well treating method and composition. 4,366,073, Cl. 252-8.55R.

McLaughlin, Homer C.; and Weaver, Jimmie D., to Halliburton Company. Oil well treating method and composition. 4,366,074, Cl. 252-8.55R.

McNew, Thomas A. System for passing elongated paper through a reproducing apparatus. 4,365,733, Cl. 226-109.000.

McVeen, Milford D., to Towmotor Corporation. High visibility lift apparatus. 4,365,693, Cl. 187-9.00E.

Mead Corporation, The: *See*—
Ullman, John E., 4,365,456, Cl. 53-69.000.

Mead Johnson & Company: *See*—
Temple, Davis L., Jr., 4,366,156, Cl. 424-251.000.

Medicon, Inc.: *See*—
Barker, Kent R., 4,365,636, Cl. 128-716.000.

Medina, John A.; and Pendergast, George G. Elevational platform for balance beams and like articles. 4,365,801, Cl. 272-111.000.

Mehki, Larry L. Freight securing apparatus. 4,365,919, Cl. 410-120.000.

Mehok, John J.: *See*—
Pearce, David A.; and Mehok, John J., 4,366,103, Cl. 260-967.000.

Meier, Ernst: *See*—
Lassig, Wolfgang; Meier, Ernst; and Schleger, Siegfried, 4,366,240, Cl. 430-542.000.

Mein, James H.: *See*—
Hanlon, Charles M.; Mein, James H.; and Schultz, William J., 4,366,197, Cl. 428-43.000.

Melby, Phillip J. Golf club including rotatable grip. 4,365,807, Cl. 273-81.00C.

Melton, Keith; Mercier, Olivier; and Riegger, Helmut, to BBC Brown, Boveri & Company Limited. Method of producing a memory alloy. 4,365,996, Cl. 419-28.000.

Melvin, Hubert A. Solar hot water heater. 4,365,615, Cl. 126-419.000.

Melvin, Stephen R. Keeper for a game missile and a game implement. 4,365,804, Cl. 273-25.000.

Mengelle, Andre J.: *See*—
Lippler, Remy R.; Mengelle, Andre J.; and Plazanet, Jacques, 4,365,558, Cl. 102-431.000.

Mercier, Olivier: *See*—
Melton, Keith; Mercier, Olivier; and Riegger, Helmut, 4,365,996, Cl. 419-28.000.

Merck & Co., Inc.: *See*—
Engelhart, John E.; Angeles, Marshall R.; and D'Errico, Michael J., 4,366,170, Cl. 424-304.000.

Merck Patent Gesellschaft mit beschrankter Haftung: *See*—
Draenert, Klaus, 4,365,357, Cl. 3-1.910.
Neumann, Siegfried; Hennrich, Norbert; Orth, Hans-Dieter; Pfleiderer, Gerhard; Jockers-Wretou, Evangelista; and Pauly, Hans, 4,366,242, Cl. 435-7.000.

Meredith, Francis M. P., deceased; and by Meredith, Priscilla J., administratrix. Recovery of coated aluminium scrap. 4,365,993, Cl. 75-68.00R.

Meredith, Priscilla J., administratrix: *See*—
Meredith, Francis M. P., deceased; and Meredith, Priscilla J., administratrix, 4,365,993, Cl. 75-68.00R.

Merkle, Josef, to Daimler-Benz Aktiengesellschaft. Vehicle, especially a cab-over-engine commercial vehicle. 4,365,825, Cl. 280-777.000.

Messier-Hispano-Bugatti: *See*—
Masclet, Jean; and Papay, Roger, 4,365,643, Cl. 137-70.000.

Metal Box Limited: *See*—
Walden, Richard G., 4,365,724, Cl. 220-67.000.

Metal Improvement Company, Inc.: *See*—
Feld, Paul G.; and Engel, Richard M., 4,365,493, Cl. 72-53.000.

Metal Leve S.A. Industria e Comercio: *See*—
Mahrus, Duraid, 4,365,399, Cl. 29-156.50R.

Metcalf, Wilbur F., to Electro Corporation. Event rate counter. 4,366,373, Cl. 235-92.0DM.

Metrailer, William J.; and Wiechert, Steven, to Exxon Research and Engineering Co. Fluid coking with the addition of solids. 4,366,048, Cl. 208-127.000.

Michaels, Stuart R.; and Sacks, Stephen J., to ILC Data Device Corporation. Companding analog to digital converter. 4,366,469, Cl. 340-347.0AD.

Micro Magnetic Industries, Inc.: *See*—
Main, David T.; Riddle, John B.; and Allen, Rod H., 4,366,481, Cl. 340-825.540.

Micro Pure Systems, Inc.: *See*—
Abts, Leigh R., 4,365,515, Cl. 73-632.000.

Mid Oregon Iron, Inc.: *See*—
Johnson, Nolton C., Jr.; and Rein, David A., 4,365,530, Cl. 83-490.000.

Midgley, John E.; and Wilkins, Terence A., to Amersham International Public Limited Company. Assay for the free portion of substances in biological fluids. 4,366,143, Cl. 436-501.000.

Midrex Corporation: *See*—
Scarlett, John C.; and Sanzenbacher, Charles W., 4,365,789, Cl. 266-87.000.

Mihalow, Frederick A., to Bethlehem Steel Corp. Optical attenuation monitor system and method. 4,365,896, Cl. 356-446.000.

Mihelic, Edward L.; and Schlosberg, Samuel B., to United States Steel Corporation. Treatment of blast furnace wastewater. 4,366,064, Cl. 210-668.000.

Mikami, Masao: *See*—
Shiozaki, Hiroyuki; Mikami, Masao; Imai, Isao; and Iwanami, Toshio, 4,365,496, Cl. 72-249.000.

Mikitenko, Paul; and Asselineau, Lionel, to Institut Francais du Petrole. Process for producing dehydrated alcohols for use as component of a motor fuel composition. 4,366,032, Cl. 203-18.000.

Milburn, Wanda O.; and Clack, T. Dean. Oculotorsionometer. 4,365,874, Cl. 351-243.000.

Miles Laboratories, Inc.: *See*—
Rupchock, Patricia A.; and Tyhach, Richard J., 4,366,243, Cl. 435-7.000.

Milhous, Brian B., to Paccar Inc. Unitary front light mounting assembly for a vehicle. 4,366,530, Cl. 362-80.000.

Millar, Thomas D.: *See*—
Phillips, Evan M.; and Millar, Thomas D., 4,365,589, Cl. 119-14.020.

Miller, Charles E.: *See*—
Culbert, Robert M.; and Miller, Charles E., 4,365,980, Cl. 55-315.000.

Miller, Charles K., to Codex Corporation. Digital filter with scaled tap coefficients. 4,366,547, Cl. 364-724.000.

Miller, George A.; and Chan, Hak-Foon, to Rohm and Haas Company. 1 and 4-Arylcyanoalkyl-1,2,4-triazoles and fungicidal use. 4,366,165, Cl. 424-269.000.

Miller, Gregory E., to Cubic Western Data. Ticket exit drive module. 4,365,796, Cl. 271-274.000.

Miller, Hans-Dieter: *See*—
Ast, Gerhard; Dietl, Josef; Helmreich, Dieter; Miller, Hans-Dieter; and Sirtl, Erhard, 4,366,024, Cl. 156-607.000.

Miller, Harvey R. Fuel feed system for internal combustion engines. 4,366,104, Cl. 261-18.00A.

Miller, James M. Rocker-arm having perpendicular geometry at valve mid-lift. 4,365,785, Cl. 251-231.000.

Mine Safety Appliances Company: *See*—
McDonough, John B., 4,365,981, Cl. 55-497.000.

Mineo, Masatoshi: *See*—
Matsumoto, Tadayuki; Imaeda, Kozo; Mineo, Masatoshi; and Nakagawa, Kiyoshi, 4,365,394, Cl. 28-258.000.

Minnesota Mining and Manufacturing Company: *See*—
Breedlove, James G., 4,366,342, Cl. 174-52.0FP.
Chang, Robert W. H., 4,366,146, Cl. 424-52.000.
Norrell, Donald L.; Petersen, Kurt H.; and Schmid, Ronald F., 4,366,509, Cl. 358-289.000.

Minolta Camera Kabushiki Kaisha: *See*—
Saito, Itaru, 4,366,220, Cl. 430-31.000.

MINOX GmbH: *See*—
Knapp, Helmut, 4,365,884, Cl. 354-187.000.

Mir, Jose M., to Eastman Kodak Company. Electronic color imaging apparatus having improved color control device. 4,366,499, Cl. 358-75.000.

Mir, Jose M.: *See*—
Kurtz, Clark N.; Mir, Jose M.; and Varner, Jerry R., 4,366,500, Cl. 358-75.000.

Mirkin, George. Method and apparatus for structural analysis. 4,366,380, Cl. 250-306.000.

Misaizu, Tetsuo; and Nakao, Masumi, to Nippon Electric Co., Ltd. Memory device. 4,366,559, Cl. 365-205.000.

Mita Industrial Company Limited: *See*—
Kimura, Hiroshi; Hisajima, Masahiko; Shigemura, Yutaka; and Irie, Yoichiro, 4,365,893, Cl. 355-75.000.

Mita Wood Products Inc.: *See*—
Potvin, Alfred M., 4,365,531, Cl. 83-767.000.

Mitsopoulos, Tom; Jhaveri, Satish; and Lui, Charles, to Valvoline Oil & Chemicals Ltd. Binder compositions and process for making molded products therewith. 4,366,266, Cl. 523-143.000.

Mitsubishi Denki Kabushiki Kaisha: *See*—
Kyomasu, Mikio; Nakao, Yoshiharu; and Nakayama, Mitsuo, 4,366,556, Cl. 365-189.000.
Nishimura, Kiyomitsu, 4,366,441, Cl. 330-51.000.
Ogura, Masato; Horio, Noriyasu; and Suzuki, Kinzo, 4,365,930, Cl. 415-61.000.
Shima, Ichiji; Teshima, Hiroshi; Koizumi, Takayuki; and Inoue, Satoru, 4,366,544, Cl. 364-550.000.
Takatsuki, Toshiharu; Fujiwara, Ken-ichi; Nomura, Jutaro; and Okamura, Shigeru, 4,366,347, Cl. 179-2.0DP.
Takatsuki, Toshiharu; Fujiwara, Ken-ichi; Yanagisawa, Sinobu; and Okamura, Shigeru, 4,366,572, Cl. 375-37.000.
Takeyama, Tetsu; Azuma, Kenkoku; Ikeda, Akira; Yamamoto, Toshie; and Katsurada, Shigeho, 4,365,979, Cl. 55-181.000.
Yatomi, Takeshi; Tanaka, Yutaka; and Ozaki, Yoshio, 4,366,359, Cl. 219-69.00M.

Mitsubishi Gas Chemical Company, Inc.: *See*—
Amemiya, Akira; Kunii, Tadashi; Furusawa, Tomotaka; Takeda, Mutsuhiko; Tanaka, Katsumasa; Umemura, Toshikazu; Ono, Yoshihiro; Masumoto, Isamu; Nakao, Noriyasu; and Furukawa, Masanori, 4,366,305, Cl. 528-230.000.
Nawata, Takanari; Komatsu, Toshio; and Ohtsuka, Masayuki, 4,366,179, Cl. 426-395.000.

Mitsubishi Petrochemical Company Limited: *See*—
Kitagawa, Sadao; and Okada, Isao, 4,366,296, Cl. 526-77.000.

Mitsui Petrochemical Industries Ltd.: *See*—
Kato, Akifumi; Kaneshige, Nobuhiko; and Yamamoto, Ryoichi, 4,366,123, Cl. 422-135.000.

Mitsui Toatsu Chemicals, Inc.: *See*—
Numata, Satoshi; Nakatani, Kiyoshi; Yamazaki, Noboru; and Yuasa, Teruo, 4,366,328, Cl. 568-734.000.

Miura, Eiichi, to Nissan Motor Company, Limited. Door for an automotive vehicle. 4,365,443, Cl. 49-502.000.

Miyai, Keiko: *See*—
Morita, Hiroshi; and Miyai, Keiko, 4,365,870, Cl. 350-357.000.

Miyaji, Kazumi: *See*—
Sato, Masaaki; Miyaji, Kazumi; Yoshida, Masahide; Fukuoka, Norio; Nakasho, Kazuo; and Furuta, Kenji, 4,366,514, Cl. 360-74.400.

Miyakawa, Eiji, to Miyakawa Industry Co., Ltd. Turning type multi-spindle attachment. 4,365,916, Cl. 408-46.000.

Miyakawa Industry Co., Ltd.: *See*—
Miyakawa, Eiji, 4,365,916, Cl. 408-46.000.

Miyake, Nobuyuki: *See*—
Hosono, Nagao; Miyake, Nobuyuki; Kanbe, Junichiro; Tsukada, Shusei; and Arao, Kozo, 4,365,586, Cl. 118-652.000.

Miyake, Osamu: *See*—
Kawai, Taneichi; Nishida, Koji; Miyake, Osamu; and Hamajima, Shigemitsu, 4,365,565, Cl. 112-103.000.

Miyamoto, Yoshimi; Kojima, Keiichi; and Toriumi, Yasuo, to Sumitomo Electric Industries; and Nippondenso Co., Ltd. Ignition cables. 4,366,464, Cl. 338-214.000.

Miyashita, Ichiro: *See*—
Kohata, Masakazu; Hayashi, Hideki; and Miyashita, Ichiro, 4,366,533, Cl. 363-136.000.

Mizelle, Ned W., to Hoover Universal, Inc. Inertial lock. 4,365,837, Cl. 297-216.000.

Mizoue, Kazutoshi: *See*—
Mizutani, Taku; Yamagishi, Michio; Mizoue, Kazutoshi; Kawashima, Akira; Omura, Sadafumi; Otake, Noboru; and Seto, Haruo, 4,366,311, Cl. 536-123.000.

Mizukami, Masao: *See*—
Kitamura, Nobuaki; Masuda, Kouji; and Mizukami, Masao, 4,366,397, Cl. 307-264.000.

Mizunoya, Kiyoshi; Matsumoto, Shoichi; Tomii, Hitoshi; Kawamoto, Masahiro; and Wada, Yuusuke, to Tokyo Shibaura Denki Kabushiki Kaisha. Liquid crystal display element. 4,366,080, Cl. 252-299.300.

Mizutani, Nagao: *See*—
Kurihara, Toshio; and Mizutani, Nagao, 4,365,550, Cl. 101-93.040.

Mizutani, Taku; Yamagishi, Michio; Mizoue, Kazutoshi; Kawashima, Akira; Omura, Sadafumi; Otake, Noboru; and Seto, Haruo, to Taisho Pharmaceutical Co., Ltd. Novel dianemycin derivative. 4,366,311, Cl. 536-123.000.

Mobil Oil Corporation: *See*—
Fitch, John L., 4,365,678, Cl. 175-323.000.
Tobias, Michael A., 4,366,293, Cl. 525-301.000.

Mochida, Haruo; Tanaka, Yoshiyuki; Yamamoto, Yoshio; and Kataoka, Minoru, to Nissan Motor Co., Ltd.; and Fuji Kiko Company, Limited. Universal joint. 4,365,488, Cl. 464-132.000.

Modern Industries Signal Equipment, Inc.: *See*—
Geiger, Willard L., 4,365,777, Cl. 246-130.000.

Moehren, Hans-Heiner. Anchor lock fastening assembly. 4,365,744, Cl. 238-323.000.

Mohan, Arthur G.: *See*—
Rauhut, Michael M.; and Mohan, Arthur G., 4,366,079, Cl. 252-188.3CL.

Mohring, Gunter: *See*—
Bode, Udo; Thiele, Paul; Mohring, Gunter; and Hildebrand, Helmut, 4,366,457, Cl. 333-237.000.

Mohs, Rudolf: *See*—
Jachowski, Johannes; and Mohs, Rudolf, 4,365,997, Cl. 148-31.000.

Molina, Orlando G., to Rockwell International Corporation. Ultrasonic couplant gel compositions and method for employing same. 4,365,516, Cl. 73-644.000.

Molins Limited: *See*—
Hinchcliffe, Dennis; and Luddington, Eric A., 4,365,703, Cl. 198-347.000.

Molt, Kenneth R., to Carstab Corporation. Compounds having two bis (2,2,6,6-tetramethyl-4-piperidyl)-substituted heterocyclic rings and polymers containing same. 4,366,277, Cl. 524-102.000.

Monick, John A., to Colgate-Palmolive Company. Pressure dispensable gelled alcohol fuel. 4,365,971, Cl. 44-7.00C.

Montedison S.p.A.: *See*—
Le Van Mao, Raymond; Pilati, Orlando; Moretti, Enrico; Covini, Romano; and Genoni, Fausto, 4,366,135, Cl. 423-329.000.

Montgomery, Gary V., to Sunbeam Plastics Corporation. Child resistant closure and container assembly. 4,365,721, Cl. 215-217.000.

Moore Business Forms, Inc.: *See*—
Alston, Julia M., 4,366,188, Cl. 427-150.000.

Moore, James L. Motor/generator armature portable baking oven. 4,366,370, Cl. 219-535.000.

Morancho, Roland: *See*—
Ghommidh, Josette; Buttazzoni, Bernard; Constant, Georges; Diloy, Etienne; and Morancho, Roland, 4,366,183, Cl. 427-2.000.

Morand, Adolf: *See*—
Buser, Hansjorg; and Morand, Adolf, 4,366,232, Cl. 430-390.000.

Moretti, Enrico: *See*—
Le Van Mao, Raymond; Pilati, Orlando; Moretti, Enrico; Covini, Romano; and Genoni, Fausto, 4,366,135, Cl. 423-329.000.

Moretto, Hans-Heinrich: *See*—
Friemann, Hans; Moretto, Hans-Heinrich; Alberts, Heinrich; de Montigny, Armand; and Toepsch, Hans, 4,366,286, Cl. 524-588.000.

Morgan, George W., to Suncor Inc. Ice disaggregation system. 4,365,571, Cl. 114-42.000.

Morgan, Wendell D., to Acco Industries, Inc. Loader-unloader system for workpieces. 4,365,920, Cl. 414-224.000.

Mori, Ichiro: *See*—
Sano, Shunichi; Shinozaki, Toshiaki; and Mori, Ichiro, 4,366,383, Cl. 250-492.300.

Mori, Kinji; and Ihara, Hirokazu, to Hitachi, Ltd. Control information communication method and system through a common signal transmission line. 4,366,479, Cl. 340-825.050.

Mori, Mitsuo; and Suzuki, Yoshihisa, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Apparatus for automatically changing cans of a spinning machine. 4,365,388, Cl. 19-159.00A.

Mori, Sanae, to Daido Metal Company Ltd. Method of producing multi-layer sliding material. 4,365,995, Cl. 419-6.000.

Mori, Sumio, to Fuji Photo Film Co., Ltd. Shaded picture signal processing system and method. 4,366,507, Cl. 358-283.000.

Mori, Takao: *See*—
Hirao, Motohisa; Nakamura, Michiharu; Doi, Atsutoshi; Tsuji, Shinji; Takeda, Yutaka; and Mori, Takao, 4,366,569, Cl. 372-46.000.

Mori, Takashi; Takaku, Sakae; Matsuura, Fumiaki; Murakami, Yasushi; Noda, Yukifumi; Yamazaki, Tamotsu; Neichi, Tomohiro; Nakakimura, Hiroshi; Kataoka, Shigeyuki; Matsuno, Takashi; Hata, Shun-ichi; and Takanashi, Shigeru, to Chugai Seiyaku Kabushiki Kaisha. Nicotinamide derivative, process for preparing the same and pharmaceutical composition containing the same. 4,366,161, Cl. 424-266.000.

Morimoto, Masato: *See*—
Maruyama, Teruo; and Morimoto, Masato, 4,366,519, Cl. 360-129.000.

Morishita, Teru; Sugiyama, Matsuyoshi; and Suzuki, Toshikazu, to Toyota Jidosha Kogyo Kabushiki Kaisha. Rotary type electrostatic spray painting device. 4,365,759, Cl. 239-703.000.

Morishita, Teru: *See*—
Sugiyama, Matsuyoshi; Morishita, Teru; and Suzuki, Toshikazu, 4,365,760, Cl. 239-703.000.

Morita, Akiyoshi; and Sato, Mitsuyoshi, to Toyota Jidosha Kabushiki Kaisha. Screw in-line type injection molding method and apparatus for low-pressure injection molding. 4,366,110, Cl. 264-328.130.

Morita, Hiroshi; and Miyai, Keiko, to Tokyo Shibaura Denki Kabushiki Kaisha. Electrochromic display device. 4,365,870, Cl. 350-357.000.

Morozov, Vladimir M.: *See*—
Karpov, Jury A.; Burylev, Boris P.; Glavin, German G.; Kvin, Valeria E.; Kovalev, Vasily V.; Natanson, Konstantin J.; Orlov, Vladimir V.; Kuznetsov, Lev B.; Zaitsev, Anatoly M.; Kartsev, Valentin E.; Morozov, Vladimir M.; and Kovalev, Gennady G., 4,365,969, Cl. 436-75.000.

Morozumi, Takuro: *See*—
Shikata, Makoto; Osano, Hisashi; and Morozumi, Takuro, 4,365,603, Cl. 123-440.000.

Mortl, Gunther L., to Osterreichisch-Amerikanische Magnesit Aktiengesellschaft. Refractory chrome-magnesia bricks and compositions made from granular fused material. 4,366,256, Cl. 501-115.000.

Moser, Roland: *See*—
Urech, Karl; Habermeier, Jurgen; and Moser, Roland, 4,366,108, Cl. 264-137.000.

Motin, Anatoly I.: *See*—
Brounshtein, Viktor B.; Petrov, Vladimir I.; Otsup, Rudolf R.; Ignatieva, Galina P.; Kozlovsky, Vladlen V.; Lipshits, Leonard Y.; Zhuravlev, Oleg V.; Koba, Mikhail G.; Seliverstov, Konstantin B.; Igisheva, Tamara A.; Drobyazko, Petr A.; Motin, Anatoly I.; Fot, Viktor D.; Yakimov, Lev T.; and Kuznetsov, Boris G., 4,366,124, Cl. 422-278.000.

Motorola, Inc.: *See*—
Cave, David L.; and Davis, Walter R., 4,366,445, Cl. 330-257.000.
McDermott, Mark W.; and Feldman, Neil B., 4,366,560, Cl. 365-228.000.

Motsinger, James V.: *See*—
McCombs, Russell L.; and Motsinger, James V., 4,365,402, Cl. 29-407.000.

Moum, Stanley: *See*—
Ruggieri, Albert P.; Marinaccio, Frank J.; Campbell, Neil E.; Allen, Wayne; Moum, Stanley; Malatesta, Paul F.; Pietrowski, Joseph J.; and Schwartz, Leonard H., 4,365,590, Cl. 119-15.000.

Mouri, Yasunori; Suda, Seiji; Shida, Masami; and Furuhashi, Toshio, to Hitachi, Ltd. Method and system for engine control. 4,366,541, Cl. 364-431.050.

Muchel, Franz, to Carl Zeiss-Stiftung. Optical system for microscopes. 4,365,871, Cl. 350-414.000.

Muck, Gustav: *See*—
Korte, Hans D.; and Muck, Gustav, 4,366,003, Cl. 134-18.000.

Mueller Co.: *See*—
Hauffe, William L.; and Daghe, Joseph L., 4,365,393, Cl. 24-279.000.

Mueller, Hans W.; Shattuck, Richard E.; Cryder, Albert H.; and Nelson, John L., to SCM Corporation. Linespacing apparatus. 4,365,904, Cl. 400-568.000.

Muhlbauer, Otto: *See*—
Rosler, Helmut; Muhlbauer, Otto; and Bigall, Klaus D., 4,366,396, Cl. 307-261.000.

Mukai, Kunio: *See*—
Yamada, Yoshimi; Ooishi, Tadashi; Kato, Toshiro; and Mukai, Kunio, 4,366,150, Cl. 424-199.000.

Muldoon, Edward M., Jr., to Bivar, Inc. Method and means for insertion of inserts into a hole of a predrilled board. 4,365,411, Cl. 29-845.000.

Mullen, David: *See*—
Shuttleworth, Leslie; and Mullen, David, 4,366,321, Cl. 549-68.000.

Muller, Heinz; Hartmannsgruber, Max; and Guttler, Hermann. Stop motion for spinning machine. 4,365,465, Cl. 57-84.000.

Munekata, Kenichi; Suzuki, Yasuo; and Ohta, Norio, to Toyoda Koki Kabushiki Kaisha. Guard device for a grinding wheel in a grinding machine. 4,365,446, Cl. 51-268.000.

Munson, Robert E.: *See*—
Weiss, Michael A.; and Munson, Robert E., 4,366,484, Cl. 343-700.0MS.

Murakami, Hiroyasu: *See*—
Kiuchi, Masayoshi; Kawamura, Masaharu; and Murakami, Hiroyasu, 4,365,880, Cl. 354-60.00L.

Murakami, Reiji; and Nakajima, Shunichi, to Tokyo Shibaura Denki Kabushiki Kaisha. Electrostatic copying apparatus with an attachment to enable two-sided copying. 4,365,886, Cl. 355-3.0SH.

Murakami, Yasushi: *See*—
Mori, Takashi; Takaku, Sakae; Matsuura, Fumiaki; Murakami, Yasushi; Noda, Yukifumi; Yamazaki, Tamotsu; Neichi, Tomohiro; Nakakimura, Hiroshi; Kataoka, Shigeyuki; Matsuno, Takashi; Hata, Shun-ichi; and Takanashi, Shigeru, 4,366,161, Cl. 424-266.000.

Murray, Myles N. Rubber driving band, artillery shell employing same, and method of making the band and assembling same in the shell. 4,366,015, Cl. 156-185.000.

Muto, Norio: *See*—
Tanasawa, Yasusi; Muto, Norio; Saito, Akinori; and Kawamura, Kiyomi, 4,365,746, Cl. 239-125.000.

Myerly, James W. Snow removal accessory for snow throwing devices. 4,365,430, Cl. 37-244.000.

Myers, Chester D.: *See*—
Cameron, Jacquelyn J.; and Myers, Chester D., 4,366,097, Cl. 260-123.500.

Nadella: *See*—
Stephan, Gerard, 4,365,909, Cl. 403-157.000.

Nadkarni, Ramachandra A.: *See*—
Williams, Rollie B.; and Nadkarni, Ramachandra A., 4,365,975, Cl. 48-197.00R.

Nagai, Yoji: *See*—
Masuda, Toyohiko; Ueno, Takeshi; Nagai, Yoji; Ishimaru, Hitoshi; and Nakamura, Shozo, 4,365,476, Cl. 60-686.000.

Nagata, Wataru: *See*—
Yoshioka, Mitsuru; Uyeo, Shoichiro; Hamashima, Yoshio; Kikkawa, Ikuo; Tsuji, Teruji; and Nagata, Wataru, 4,366,316, Cl. 544-90.000.

Nagumo, Masahide: *See*—
Kusakabe, Hiromi; and Nagumo, Masahide, 4,366,448, Cl. 330-268.000.

Naher, Gotthilf: *See*—
Thum, Waldemar; Lang, Gunter; Vetter, Hellmuth; and Naher, Gotthilf, 4,366,249, Cl. 435-188.000.

Naito, Shotaro: *See*—
Omae, Tsutomu; Marumoto, Katsuji; and Naito, Shotaro, 4,366,420, Cl. 318-338.000.

Nakada, Akira; and Adachi, Takeshi, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument with plural tone production channels. 4,365,532, Cl. 84-1.190.

Nakada, Teruo; and Iwahara, Mitsuo, to Isuzu Motors, Limited. Diesel throttle valve control system. 4,365,600, Cl. 123-339.000.

Nakagawa, Kiyoshi: *See*—
Matsumoto, Tadayuki; Imaeda, Kozo; Mineo, Masatoshi; and Nakagawa, Kiyoshi, 4,365,394, Cl. 28-258.000.

Nakajima, Shunichi: *See*—
Murakami, Reiji; and Nakajima, Shunichi, 4,365,886, Cl. 355-3.0SH.

Nakakimura, Hiroshi: *See*—
Mori, Takashi; Takaku, Sakae; Matsuura, Fumiaki; Murakami, Yasushi; Noda, Yukifumi; Yamazaki, Tamotsu; Neichi, Tomohiro; Nakakimura, Hiroshi; Kataoka, Shigeyuki; Matsuno, Takashi; Hata, Shun-ichi; and Takanashi, Shigeru, 4,366,161, Cl. 424-266.000.

Nakamura, Hiroya, to Konishiroku Photo Industry Co., Ltd. Method for controlling toner concentration. 4,365,894, Cl. 355-77.000.

Nakamura, Kotaro, to Fuji Photo Film Co., Ltd. Blix process for silver halide color photographic materials. 4,366,233, Cl. 430-393.000.

Nakamura, Masakazu, to Sumitomo Precision Products Company, Ltd. Heat sink. 4,365,665, Cl. 165-80.00B.

Nakamura, Michiharu: *See*—
Fukuzawa, Tadashi; Nakamura, Michiharu; and Takahashi, Susumu, 4,366,567, Cl. 372-38.000.
Hirao, Motohisa; Nakamura, Michiharu; Doi, Atsutoshi; Tsuji, Shinji; Takeda, Yutaka; and Mori, Takao, 4,366,569, Cl. 372-46.000.

Nakamura, Shozo: *See*—
Masuda, Toyohiko; Ueno, Takeshi; Nagai, Yoji; Ishimaru, Hitoshi; and Nakamura, Shozo, 4,365,476, Cl. 60-686.000.

Nakano, Yasuo, to Kabushiki Kaisha Bon'ni. Method and apparatus for setting markings in a fabric. 4,365,732, Cl. 223-57.000.

Nakao, Masumi: *See*—
Misaizu, Tetsuo; and Nakao, Masumi, 4,366,559, Cl. 365-205.000.

Nakao, Noriyasu: *See*—
Amemiya, Akira; Kunii, Tadashi; Furusawa, Tomotaka; Takeda, Mutsuhiko; Tanaka, Katsumasa; Umemura, Toshikazu; Ono, Yoshihiro; Masumoto, Isamu; Nakao, Noriyasu; and Furukawa, Masanori, 4,366,305, Cl. 528-230.000.
Nakao, Yoshiharu: *See*—
Kyomasu, Mikio; Nakao, Yoshiharu; and Nakayama, Mitsuo, 4,366,556, Cl. 365-189.000.
Nakasho, Kazuo: *See*—
Sato, Masaaki; Miyaji, Kazumi; Yoshida, Masahide; Fukuoka, Norio; Nakasho, Kazuo; and Furuta, Kenji, 4,366,514, Cl. 360-74.400.
Nakatani, Kiyoshi: *See*—
Numata, Satoshi; Nakatani, Kiyoshi; Yamazaki, Noboru; and Yuasa, Teruo, 4,366,328, Cl. 568-734.000.
Nakayama, Masaharu: *See*—
Ujikawa, Norihisa; and Nakayama, Masaharu, 4,366,290, Cl. 525-169.000.
Nakayama, Mitsuo: *See*—
Kyomasu, Mikio; Nakao, Yoshiharu; and Nakayama, Mitsuo, 4,366,556, Cl. 365-189.000.
Namboodri, Chettoor G.: *See*—
Gregorian, Razmic S.; Namboodri, Chettoor G.; and Johnson, John D., 4,365,968, Cl. 8-477.000.
Narahara, Toshikazu: *See*—
Ogata, Masatsugu; Asano, Hideki; Narusawa, Tsuneo; and Narahara, Toshikazu, 4,366,516, Cl. 360-84.000.
Narducy, Kenneth W.: *See*—
Arbir, Francis W.; Raden, Daniel S.; and Narducy, Kenneth W., 4,366,084, Cl. 252-426.000.
Narusawa, Tsuneo: *See*—
Ogata, Masatsugu; Asano, Hideki; Narusawa, Tsuneo; and Narahara, Toshikazu, 4,366,516, Cl. 360-84.000.
Nash, David D., to Durapipe Limited. Co-extrusion die apparatus for co-extruding plastics materials. 4,365,949, Cl. 425-463.000.
Naskar, Sasanka S.; and Pass, Reinhard, to Dynamit Nobel AG. Biodegradable, oxidation-resistant liquid ester mixtures with low turbidity points. 4,366,100, Cl. 260-410.700.
Natanson, Konstantin J.: *See*—
Karpov, Jury A.; Burylev, Boris P.; Glavin, German G.; Kvin, Valeria E.; Kovalev, Vasily V.; Natanson, Konstantin J.; Orlov, Vladimir V.; Kuznetsov, Lev B.; Zaitsev, Anatoly M.; Kartsev, Valentin E.; Morozov, Vladimir M.; and Kovalev, Gennady G., 4,365,969, Cl. 436-75.000.
National Research Development Corporation: *See*—
Cowley, Andrew G.; Payne, David N.; and Watson, Paul M., 4,365,864, Cl. 350-96.160.
National Semiconductor Corporation: *See*—
Hu, Chenming, 4,366,555, Cl. 365-185.000.
Kohn, Leslie D., 4,366,536, Cl. 364-200.000.
National Starch and Chemical Corporation: *See*—
Silano, Michael A.; and Featherston, Robert D., 4,366,275, Cl. 524-47.000.
Nawata, Takanari; Komatsu, Toshio; and Ohtsuka, Masayuki, to Mitsubishi Gas Chemical Company, Inc. Oxygen and carbon dioxide absorbent and process for storing coffee by using the same. 4,366,179, Cl. 426-395.000.
Nayak, Ashok L., to Corning Glass Works. Furnace delivery system. 4,365,986, Cl. 65-136.000.
Naylor, Donald B.; and Krywiczanin, Wladyslaw H., to British-American Tobacco Company Limited. Spraying devices. 4,365,585, Cl. 118-302.000.
NCR Corporation: *See*—
Biedermann, Horst H.; Hermann, Ferdinand; Pechinger, Ernst; and Sereinigg, Emil L. F., 4,365,902, Cl. 400-124.000.
Nebrig, Donald A.: *See*—
Kortan, William A.; and Nebrig, Donald A., 4,365,492, Cl. 72-10.000.
Neff, Larry M., to S.U.N. Engineering, Inc. Pipeline pig having improved end plate retention. 4,365,379, Cl. 15-104.06R.
Neichi, Tomohiro: *See*—
Mori, Takashi; Takaku, Sakae; Matsuura, Fumiaki; Murakami, Yasushi; Noda, Yukifumi; Yamazaki, Tamotsu; Neichi, Tomohiro; Nakakimura, Hiroshi; Kataoka, Shigeyuki; Matsuno, Takashi; Hata, Shun-ichi; and Takanashi, Shigeru, 4,366,161, Cl. 424-266.000.
Neill, Daniel L.; and Tribe, Leonard T., to Kelsey Hayes Company. Pressure transducer and method of making same. 4,365,406, Cl. 29-593.000.
Nelson, Herman E. Combination toy and book. 4,365,438, Cl. 46-202.000.
Nelson, John L.: *See*—
Mueller, Hans W.; Shattuck, Richard E.; Cryder, Albert H.; and Nelson, John L., 4,365,904, Cl. 400-568.000.
Nelson, Lynn S. Poured adobe building construction and method of forming same. 4,365,451, Cl. 52-169.900.
Nesterov, Viktor I.: *See*—
Kurovich, Arkady N.; Krasnokutsky, Jury B.; Sysoev, Vyacheslav N.; Golman, Lev D.; Zuev, Vladimir T.; Nesterov, Viktor I.; and Laboda, Viktor A., 4,365,494, Cl. 72-63.000.
Neuerburg, Horst: *See*—
Werner, Anton; and Neuerburg, Horst, 4,365,462, Cl. 56-255.000.
Neuhierl, Hermann. Lap counter for radio controlled vehicles. 4,366,374, Cl. 235-93.000.
Neukomm, Marguerite, heiress: *See*—
Neukomm, Walter, deceased, 4,365,529, Cl. 82-38.00A.
Neukomm, Walter, deceased (by Neukomm, Marguerite, heiress), to Societe de Vente et de Fabrication pour le Decolletage LNS S.A. Hydrodynamic injection device for machine tools. 4,365,529, Cl. 82-38.00A.
Neuman Chimney Cleaners, Inc.: *See*—
Neuman, Orin E., 4,365,381, Cl. 15-243.000.
Neuman, Orin E., to Neuman Chimney Cleaners, Inc. Chimney cleaner. 4,365,381, Cl. 15-243.000.
Neumann, John W., to Occidental Chemical Corporation. Fluid rail conveying apparatus. 4,365,915, Cl. 406-88.000.
Neumann, Siegfried; Hennrich, Norbert; Orth, Hans-Dieter; Pfleiderer, Gerhard; Jockers-Wretou, Evangelista; and Pauly, Hans, to Merck Patent Gesellschaft mit beschrankter Haftung. Method and agent for the immunological determination of enzymes. 4,366,242, Cl. 435-7.000.
Neumann, Werner: *See*—
Vodrazka, Wolfgang; Klahr, Erhard; Oppenlaender, Knut; Trieselt, Wolfgang; Stoeckigt, Dieter; and Neumann, Werner, 4,366,326, Cl. 568-613.000.
Neyer, Jean-Marie: *See*—
Bujadoux, Karel; Neyer, Jean-Marie; and Houzeaux, Jean-Pierre, 4,366,140, Cl. 423-498.000.
NHK Spring Co., Ltd.: *See*—
Ohno, Akira; Sato, Toshiaki; and Inoue, Kanji, 4,365,824, Cl. 280-689.000.
Nibby, Chester M., Jr.: *See*—
Johnson, Robert B.; and Nibby, Chester M., Jr., 4,366,538, Cl. 364-200.000.
Johnson, Robert B.; and Nibby, Chester M., Jr., 4,366,539, Cl. 364-200.000.
Nieda, Yasuhiro; Honda, Kiyokazu; and Shinada, Hidehiro, to Tokyo Shibaura Denki Kabushiki Kaisha. Halogen incandescent lamp. 4,366,409, Cl. 313-221.000.
Nikolaev, Anatoly M.: *See*—
Chukhanov, Zinovy F.; Chukhanov, Zinovy Z.; Tsuprov, Sergei A.; Lyashenko, Ivan V.; Apter, Danil M.; Nikolaev, Anatoly M.; and Karasev, Vadim A., 4,366,043, Cl. 208-8.00R.
Nikon Kogyo Kabushiki Kaisha: *See*—
Tsuji, Masahiro, 4,366,117, Cl. 420-481.000.
Nimry, Tayseer S.; and Fields, Ellis K., to Standard Oil Company (Indiana). Copolyimides from aliphatic and aromatic anhydrides and diamines. 4,366,304, Cl. 528-189.000.
Nippon Electric Co., Ltd.: *See*—
Kasuya, Yoshihiro, 4,366,393, Cl. 307-221.00R.
Misaizu, Tetsuo; and Nakao, Masumi, 4,366,559, Cl. 365-205.000.
Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Nakada, Akira; and Adachi, Takeshi, 4,365,532, Cl. 84-1.190.
Nippon Oil and Fats Co., Ltd.: *See*—
Ujikawa, Norihisa; and Nakayama, Masaharu, 4,366,290, Cl. 525-169.000.
Nippon Steel Corporation: *See*—
Hisashi, Takahashi; Satoshi, Hanai; and Katsuyoshi, Yoshida, 4,365,583, Cl. 118-65.000.
Nippon Telegraph and Telephone Public Corp.: *See*—
Takatsuki, Toshiharu; Fujiwara, Ken-ichi; Nomura, Jutaro; and Okamura, Shigeru, 4,366,347, Cl. 179-2.0DP.
Terui, Hiroshi; and Kobayashi, Morio, 4,365,862, Cl. 350-96.130.
Ueno, Norio; Kato, Seiji; and Iwata, Atsushi, 4,366,456, Cl. 333-173.000.
Nippon Telegraph & Telephone Public Corporaton: *See*—
Takatsuki, Toshiharu; Fujiwara, Ken-ichi; Yanagisawa, Sinobu; and Okamura, Shigeru, 4,366,572, Cl. 375-37.000.
Nippondenso Co., Ltd.: *See*—
Inoue, Yozo; Hara, Kiyoshi; and Ito, Yoji, 4,365,663, Cl. 165-12.000.
Miyamoto, Yoshimi; Kojima, Keiichi; and Toriumi, Yasuo, 4,366,464, Cl. 338-214.000.
Toyama, Kouichi; Sugiura, Yasushi; and Adachi, Michio, 4,365,609, Cl. 123-635.000.
Yamazoe, Hisamitsu; Kinugawa, Masumi; and Kurii, Masaaki, 4,365,601, Cl. 123-339.000.
Nishida, Koji: *See*—
Kawai, Taneichi; Nishida, Koji; Miyake, Osamu; and Hamajima, Shigemitsu, 4,365,565, Cl. 112-103.000.
Nishiguchi, Hisanori: *See*—
Ohmukai, Yoshimi; Ogino, Toshiro; Adachi, Kinichi; and Nishiguchi, Hisanori, 4,365,952, Cl. 431-208.000.
Nishikawa, Masaji, to Olympus Optical Company Limited. Apparatus for removing unnecessary charges on a photosensitive member in an electrophotographic system. 4,365,885, Cl. 355-3.00R.
Nishimura, Kiyomitsu, to Mitsubishi Denki Kabushiki Kaisha. Signal-muting circuit for bridge amplifier. 4,366,441, Cl. 330-51.000.
Nishimura, Toshiyuki: *See*—
Makino, Kenya; Sakurai, Hideo; Watanabe, Masaru; and Nishimura, Toshiyuki, 4,366,297, Cl. 526-119.000.
Nishimura, Yoshiharu: *See*—
Uchimura, Mitsuo; Oana, Masao; and Nishimura, Yoshiharu, 4,366,552, Cl. 364-900.000.
Nishioka, Jim Z. Compound bow with unequally flexing arms. 4,365,611, Cl. 124-24.00R.
Nissan Motor Co, Ltd.: *See*—
Endo, Takuya, 4,365,606, Cl. 123-556.000.
Iizuka, Haruhiko; and Sugasawa, Fukashi, 4,365,597, Cl. 123-198.00F.
Ikeura, Kenji, 4,365,599, Cl. 123-339.000.
Ishikawa, Yoshikazu, 4,365,607, Cl. 123-556.000.

Kubota, Shikibu; and Uriya, Yuichi, 4,365,522, Cl. 74-475.000.
Miura, Eiichi, 4,365,443, Cl. 49-502.000.
Mochida, Haruo; Tanaka, Yoshiyuki; Yamamoto, Yoshio; and Kataoka, Minoru, 4,365,488, Cl. 464-132.000.
Ohkawa, Koue; Fujii, Shin; and Seino, Takashi, 4,366,269, Cl. 523-148.000.
Shikata, Makoto; Osano, Hisashi; and Morozumi, Takuro, 4,365,603, Cl. 123-440.000.
Sone, Kohki, 4,365,604, Cl. 123-440.000.
Suga, Masaaki; and Hamada, Hideo, 4,365,526, Cl. 74-866.000.
Sugasawa, Fukashi, 4,365,598, Cl. 123-198.00F.
Tachibana, Akira; Endo, Akira; and Sekine, Kenji, 4,366,546, Cl. 364-571.000.
Uchida, Masaaki; Kanegae, Hidetoshi; and Ishitani, Shigeo, 4,366,039, Cl. 204-195.00S.

Nitschke, Christian: *See*—
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Nitschko, Theodor; and Edinger, Franz K., to TMC Corporation. Front or rear jaw. 4,365,822, Cl. 280-625.000.

Niwa, Kuniyuki: *See*—
Eto, Kunihiko; Yamakage, Tetsurou; and Niwa, Kuniyuki, 4,366,421, Cl. 318-466.000.

Nixdorf Computer Corporation: *See*—
Ranalli, Charles, 4,366,511, Cl. 360-39.000.

Nixon, John M., to Edo-Aire Mitchell. Data rate generator. 4,365,511, Cl. 73-384.000.

Nizzere, Paul D.: *See*—
Klaus, Gerald R.; Williams, Thomas E.; and Nizzere, Paul D., 4,365,431, Cl. 40-352.000.

NJM, Inc.: *See*—
Voltmer, Helmut, 4,366,023, Cl. 156-542.000.

NL Industries, Inc.: *See*—
Egbert, Gary L., 4,365,977, Cl. 55-41.000.

Noda, Yukifumi: *See*—
Mori, Takashi; Takaku, Sakae; Matsuura, Fumiaki; Murakami, Yasushi; Noda, Yukifumi; Yamazaki, Tamotsu; Neichi, Tomohiro; Nakakimura, Hiroshi; Kataoka, Shigeyuki; Matsuno, Takashi; Hata, Shun-ichi; and Takanashi, Shigeru, 4,366,161, Cl. 424-266.000.

Nolf, Jean-Marie E., to N.V. Raychem S.A. Heat-recoverable reinforced enclosure. 4,366,011, Cl. 156-86.000.

Nomura, Jutaro: *See*—
Takatsuki, Toshiharu; Fujiwara, Ken-ichi; Nomura, Jutaro; and Okamura, Shigeru, 4,366,347, Cl. 179-2.0DP.

Norden, Alexander R., to Federal Pacific Electric Company. Circuit breaker with improved contact push-off spring. 4,366,354, Cl. 200-154.000.

Nordischer Machinenbau Rud. Baader: *See*—
Hartmann, Franz; and Krohn, Manfred, 4,365,387, Cl. 17-52.000.

Norman, Frederick A., to Internationale Octrooi Maatschappij "Octropa" B.V. Materials and methods for culture of nesting insects. 4,365,372, Cl. 6-1.000.

Norminton, Robert S., to Fleet Industries. One-piece snap-on foil-shaped low-drag fairing for long underwater cables. 4,365,574, Cl. 114-243.000.

Noro, Masao, to Stax Industries Limited. Highly stable constant-voltage power source device. 4,366,432, Cl. 323-224.000.

Norrell, Donald L.; Petersen, Kurt H.; and Schmid, Ronald F., to Minnesota Mining and Manufacturing Co. Facsimile apparatus with multiple scanning and printing elements. 4,366,509, Cl. 358-289.000.

Northern Illinois Gas Company: *See*—
Toulios, Peter P., 4,366,486, Cl. 343-899.000.

Northern Telecom Limited: *See*—
Westwood, William D.; Kos, Steven; and Willemsen, Herman W., 4,366,488, Cl. 346-74.300.

Northrop Corporation: *See*—
Cushman, Glenn F., 4,366,467, Cl. 340-347.0AD.

Norwood Industries, Inc.: *See*—
McCartney, John, 4,366,192, Cl. 427-246.000.

Notthoff, Johannes K.; and Zuleeg, Rainer, to McDonnell Douglas Corporation. Dual sensitivity optical sensor. 4,366,377, Cl. 250-211.00J.

Nourse, Howard: *See*—
Bridges, Thomas K.; and Nourse, Howard, 4,366,057, Cl. 210-437.000.

Nouvertne, Werner: *See*—
Freitag, Dieter; Nouvertne, Werner; Reinking, Klaus; Tacke, Peter; Kleiner, Frank; and Schmidt, Manfred, 4,366,276, Cl. 524-94.000.

Nowacki, Christopher A., to Respiratory Care, Inc. High volume humidifier-nebulizer. 4,366,105, Cl. 261-35.000.

Nu-Co Industries Inc.: *See*—
Springer, John R., 4,365,378, Cl. 15-98.000.

Numata, Satoshi; Nakatani, Kiyoshi; Yamazaki, Noboru; and Yuasa, Teruo, to Mitsui Toatsu Chemicals, Inc. Indene compound and novel process for producing indene compounds. 4,366,328, Cl. 568-734.000.

Numazawa, Akio; Katayama, Nobuaki; Ikemoto, Kazuhito; Sasaki, Kan; and Terakura, Yukio, to Toyota Jidosha Kogyo Kabushiki Kaisha. Die-cast extension housing of automotive transmission. 4,365,523, Cl. 74-606.00R.

Nunokawa, Kazuo, to Tokyo Kogaku Kikai Kabushiki Kaisha. Eye fundus camera having working distance detecting device. 4,365,872, Cl. 351-208.000.

N.V. Raychem S.A.: *See*—
Nolf, Jean-Marie E., 4,366,011, Cl. 156-86.000.

Nyberg, Jens R.: *See*—
Rastas, Jussi K.; and Nyberg, Jens R., 4,366,127, Cl. 423-26.000.

Oana, Masao: *See*—
Uchimura, Mitsuo; Oana, Masao; and Nishimura, Yoshiharu, 4,366,552, Cl. 364-900.000.

Oatham, Robert J.: *See*—
Simpson, Frank F.; Johnson, John W.; and Oatham, Robert J., 4,366,403, Cl. 310-239.000.

Obermann, George, to Singer Company, The. Two-speed continuous drive timer. 4,366,352, Cl. 200-35.00R.

Obermayer, Bertram; Skatsche, Othmar; and Greier, Josef, to List, Hans. Water-cooled, multi-cylinder internal combustion engine. 4,365,594, Cl. 123-41.82R.

O'Brian, Edward D.; and Plachy, William M. Folding slide and platform structure. 4,365,799, Cl. 272-56.50R.

Occidental Chemical Corporation: *See*—
Lash, Ronald J.; and Herr, Roy W., 4,366,036, Cl. 204-55.00R.
Neumann, John W., 4,365,915, Cl. 406-88.000.
Schulz, Arthur C.; Cook, Edward H., Jr.; and Viswanathan, Krishnan, 4,366,037, Cl. 204-98.000.

O'Connor, Rodney J., to Romec Environmental Research & Development, Inc. Process and apparatus for recovering usable water and other materials from oil field mud/waste pits. 4,366,063, Cl. 210-652.000.

Oda, Takeshi; Tanabe, Toshio; and Tanaka, Yoshimasa, to Matsushita Electric Works, Ltd. Mouth cleaning device. 4,365,376, Cl. 15-22.00R.

Odawara, Hideo: *See*—
Sugiyama, Masatoshi; Odawara, Hideo; and Takeda, Nagao, 4,365,998, Cl. 106-22.000.

Odenberg Investments Limited: *See*—
Broderick, Michael, 4,365,726, Cl. 220-211.000.

O'Doherty, George O. P.: *See*—
Clinton, Albert J., deceased; and O'Doherty, George O. P., 4,366,168, Cl. 424-283.000.

Oelsch, Jurgen, to Preh Elektrofeinmechanische Werke Jakob Preh Nachf. GmbH & Co. Keyboard. 4,366,355, Cl. 2'0-159.00B.

Oepen, Heinz: *See*—
Feller, Otto; Oepen, Heinz; and Stechow, Jochen, 4,366,543, Cl. 364-474.000.

Off, Joseph W. A.; and Early, Judson H., to Haggar Company. Patch pocket and flap constructions. 4,365,355, Cl. 2-247.000.

Ogata, Masatsugu; Asano, Hideki; Narusawa, Tsuneo; and Narahara, Toshikazu, to Hitachi, Ltd. Precision machinery component. 4,366,516, Cl. 360-84.000.

Ogata, Minoru: *See*—
Tsuda, Shin; Kurabayashi, Sadasuke; and Ogata, Minoru, 4,366,505, Cl. 358-260.000.

Ogata, Norio: *See*—
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Ogata, Saburo. Turbine-type internal-combustion engine. 4,365,472, Cl. 60-39.760.

Ogawa, Seiichiro: *See*—
Masuda, Ikuro; Shiraishi, Hisayoshi; Ogawa, Seiichiro; Shiono, Shigeo; Sakurai, Jinichi; and Yuminaka, Takeo, 4,366,478, Cl. 340-825.000.

Ogawa, Tadashi: *See*—
Ichijima, Seiji; Adachi, Keiichi; and Ogawa, Tadashi, 4,366,237, Cl. 430-505.000.

Ogawa, Yusuke: *See*—
Iwanami, Masao; and Ogawa, Yusuke, 4,365,486, Cl. 62-392.000.

Ogino, Toshiro: *See*—
Ohmukai, Yoshimi; Ogino, Toshiro; Adachi, Kinichi; and Nishiguchi, Hisanori, 4,365,952, Cl. 431-208.000.

Ogino, Yoshitaka: *See*—
Hosaka, Masao; Ogino, Yoshitaka; and Yanagawa, Nobuyuki, 4,365,888, Cl. 355-14.00R.

Ogren, Robert S., to Owatonna Tool Company. Rivet removal and fastening tool. 4,365,401, Cl. 29-243.530.

Ogura, Masato; Horio, Noriyasu; and Suzuki, Kinzo, to Mitsubishi Denki Kabushiki Kaisha. Electric fan. 4,365,930, Cl. 415-61.000.

Oguri, Ichiro; and Koyama, Yoshihiro, to Sharp Kabushiki Kaisha. Steam washing in a dishwasher. 4,366,005, Cl. 134-25.200.

Ohashi, Hiroshi: *See*—
Inoue, Hiromitsu; Ohashi, Hiroshi; and Takada, Yuji, 4,366,473, Cl. 340-562.000.

Ohga, Kunihiko: *See*—
Yokoyama, Shigeki; and Ohga, Kunihiko, 4,366,238, Cl. 430-529.000.

Ohkawa, Koue; Fujii, Shin; and Seino, Takashi, to Nissan Motor Co., Ltd. Resin coated foundry sand using crystalline unsaturated polyester as binder. 4,366,269, Cl. 523-148.000.

Ohki, Nobutaka: *See*—
Hamaoka, Tsutomu; Takahashi, Osamu; Harada, Tooru; Sakai, Minoru; and Ohki, Nobutaka, 4,366,226, Cl. 430-214.000.

Ohlschlager, Hans; and Langen, Hans, to Agfa-Gevaert Aktiengesellschaft. Photographic recording material and new merocyanines. 4,366,221, Cl. 430-507.000.

Ohmukai, Yoshimi; Ogino, Toshiro; Adachi, Kinichi; and Nishiguchi, Hisanori, to Matsushita Electric Industrial Co., Ltd. Liquid gas burner. 4,365,952, Cl. 431-208.000.

Ohnishi, Akira: *See*—
Shiozaki, Ken; Tsuge, Kazunori; and Ohnishi, Akira, 4,366,093, Cl. 252-477.00R.

Ohnishi, Masaru; and Iwata, Syuji. Electrographic imaging system. 4,366,491, Cl. 346-155.000.

Ohno, Akira; Sato, Toshiaki; and Inoue, Kanji, to NHK Spring Co., Ltd. Stabilizer for vehicle. 4,365,824, Cl. 280-689.000.
Ohta, Hiroshi, to Rikagaku Kenkyusho; and Science and Technology Agency. Josephson junction and a method of making the same. 4,366,494, Cl. 357-5.000.
Ohta, Ichiro; Tejima, Akio; Watando, Masayuki; Yamaoka, Akira; Ishiwata, Kouzi; and Yamada, Minoru, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha. All position TIG welding process. 4,366,362, Cl. 219-123.000.
Ohta, Norio: *See*—
Munekata, Kenichi; Suzuki, Yasuo; and Ohta, Norio, 4,365,446, Cl. 51-268.000.
Ohtaka, Satoshi: *See*—
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Ohtani, Sumio: *See*—
Shinagawa, Yukio; Ohtani, Sumio; Suematsu, Koichi; and Kawaguchi, Hideo, 4,366,239, Cl. 430-533.000.
Ohtsuka, Masayuki: *See*—
Nawata, Takanari; Komatsu, Toshio; and Ohtsuka, Masayuki, 4,366,179, Cl. 426-395.000.
Oishi, Kengo; and Suzuki, Osamu, to Fuji Photo Film Co., Ltd. Magnetic tape cassette receiving casing. 4,365,712, Cl. 206-387.000.
Okada, Isao: *See*—
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Okamura, Shigeru: *See*—
Takatsuki, Toshiharu; Fujiwara, Ken-ichi; Nomura, Jutaro; and Okamura, Shigeru, 4,366,347, Cl. 179-2.0DP.
Takatsuki, Toshiharu; Fujiwara, Ken-ichi; Yanagisawa, Sinobu; and Okamura, Shigeru, 4,366,572, Cl. 375-37.000.
Okamura, Takaaki: *See*—
Tanaka, Atsuo; Okamura, Takaaki; Kanda, Katsumi; and Kondo, Yoshikazu, 4,366,185, Cl. 427-386.000.
Okuzawa, Tugio: *See*—
Kakitani, Yohtaro; Kaneko, Tamaki; Ikeda, Sunao; Okuzawa, Tugio; Kikuchi, Hideo; and Hibi, Kunio, 4,365,887, Cl. 355-14.00R.
Oldelft Corporation of America: *See*—
Van Blokland, Gerardus J.; and Bailey, Henry J., 4,365,793, Cl. 271-3.100.
Olin Corporation: *See*—
Fuzesi, Stephen; and Bayusik, John G., 4,366,265, Cl. 521-167.000.
Olin, Eric J.; Carson, Harry B.; and Ball, Brian, to Amax Inc. Scheelite flotation. 4,366,050, Cl. 209-167.000.
Oliver, Colin C.: *See*—
Gillard, Richard G.; and Oliver, Colin C., 4,366,395, Cl. 307-246.000.
Olson, Charles L.; and Bazin, Lucas J., to RCA Corporation. Adjustable contrast compressor. 4,366,440, Cl. 330-11.000.
Olympus Optical Company Limited: *See*—
Nishikawa, Masaji, 4,365,885, Cl. 355-3.00R.
Sato, Masaaki; Miyaji, Kazumi; Yoshida, Masahide; Fukuoka, Norio; Nakasho, Kazuo; and Furuta, Kenji, 4,366,514, Cl. 360-74.400.
Satoh, Ken; and Orita, Shunichi, 4,366,513, Cl. 360-66.000.
Omae, Tsutomu; Marumoto, Katsuji; and Naito, Shotaro, to Hitachi, Ltd. Electromobile control device. 4,366,420, Cl. 318-338.000.
Omron Tateisi Electronics Co.: *See*—
Arimoto, Katsuhiko; and Fujimoto, Masahiro, 4,365,700, Cl. 194-2.000.
Omura, Sadafumi: *See*—
Mizutani, Taku; Yamagishi, Michio; Mizoue, Kazutoshi; Kawashima, Akira; Omura, Sadafumi; Otake, Noboru; and Seto, Haruo, 4,366,311, Cl. 536-123.000.
Ona, Isao; and Ozaki, Masaru, to Toray Silicone Co., Ltd. Organo-functional polysiloxane compositions for fiber-treating. 4,366,001, Cl. 106-287.110.
Ong, Tiong S. Lens designed for implantation into a lens capsule of a human eye. 4,365,360, Cl. 3-13.000.
Ono, Keiichi; Kawakami, Hajime; and Katsube, Junki, to Sumitomo Chemical Company, Limited. Novel polycyclic indole derivatives. 4,366,157, Cl. 424-256.000.
Ono, Yoshihiro: *See*—
Amemiya, Akira; Kunii, Tadashi; Furusawa, Tomotaka; Takeda, Mutsuhiko; Tanaka, Katsumasa; Umemura, Toshikazu; Ono, Yoshihiro; Masumoto, Isamu; Nakao, Noriyasu; and Furukawa, Masanori, 4,366,305, Cl. 528-230.000.
Ooishi, Tadashi: *See*—
Yamada, Yoshimi; Ooishi, Tadashi; Kato, Toshiro; and Mukai, Kunio, 4,366,150, Cl. 424-199.000.
Ooura, Yasumasa, to Yoshida Kogyo K.K. Method of and apparatus for interengaging a pair of slide fastener stringers. 4,365,403, Cl. 29-408.000.
Oppenlaender, Knut; Krapf, Heinz; and Lang, Siegfried, to BASF Aktiengesellschaft. Oxyalkylated fatty acids and their use as solubilizers. 4,366,151, Cl. 424-238.000.
Oppenlaender, Knut: *See*—
Vodrazka, Wolfgang; Klahr, Erhard; Oppenlaender, Knut; Trieselt, Wolfgang; Stoeckigt, Dieter; and Neumann, Werner, 4,366,326, Cl. 568-613.000.
Orain, Michel A., to Glaenzer Spicer. Transmission shaft for a front wheel drive vehicle having an automatic gear box. 4,365,686, Cl. 180-256.000.
Orain, Michel A.; and Thiault, Roger P., to Glaenzer Spicer. Coil spring having a small axial and radial overall size. 4,365,791, Cl. 267-166.000.
Orita, Shunichi: *See*—
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Orlov, Vladimir V.: *See*—
Karpov, Jury A.; Burylev, Boris P.; Glavin, German G.; Kvin, Valeria E.; Kovalev, Vasily V.; Natanson, Konstantin J.; Orlov, Vladimir V.; Kuznetsov, Lev B.; Zaitsev, Anatoly M.; Kartsev, Valentin E.; Morozov, Vladimir M.; and Kovalev, Gennady G., 4,365,969, Cl. 436-75.000.
Ortega, Robert, to Purex Corporation. Three port valve with drain passage. 4,365,366, Cl. 4-493.000.
Orth, Hans-Dieter: *See*—
Neumann, Siegfried; Hennrich, Norbert; Orth, Hans-Dieter; Pfleiderer, Gerhard; Jockers-Wretou, Evangelista; and Pauly, Hans, 4,366,242, Cl. 435-7.000.
Orthman, Henry K., to Orthman Manufacturing Co., Inc. Tandem disc row marker. 4,365,674, Cl. 172-126.000.
Orthman Manufacturing Co., Inc.: *See*—
Orthman, Henry K., 4,365,674, Cl. 172-126.000.
Osaka Semento Kabushiki Kaisha: *See*—
Fujita, Toshio; and Kashima, Toru, 4,365,999, Cl. 106-90.000.
Osano, Hisashi: *See*—
Shikata, Makoto; Osano, Hisashi; and Morozumi, Takuro, 4,365,603, Cl. 123-440.000.
Osteen, James L. Construction moving, positioning and holding tool. 4,365,786, Cl. 254-30.000.
Osterreichisch-Amerikanische Magnesit Aktiengesellschaft: *See*—
Mortl, Gunther L., 4,366,256, Cl. 501-115.000.
Ostreicher, Eugene A.; and Hou, Kenneth C., to AMF Incorporated. Filter and method of making same. 4,366,068, Cl. 210-767.000.
Otake, Noboru: *See*—
Mizutani, Taku; Yamagishi, Michio; Mizoue, Kazutoshi; Kawashima, Akira; Omura, Sadafumi; Otake, Noboru; and Seto, Haruo, 4,366,311, Cl. 536-123.000.
Otis Elevator Company: *See*—
Bevilaqua, Ernest M.; McCroskery, Allan L.; and Knerr, Theodore N., 4,365,691, Cl. 187-1.00R.
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Outokumpu Oy: *See*—
Rastas, Jussi K.; and Nyberg, Jens R., 4,366,127, Cl. 423-26.000.
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Overhead Door Corporation: *See*—
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Overlack, Claus, to Casimir Kast GmbH & Co. KG. Apparatus for bonding wood girders. 4,366,020, Cl. 156-380.200.
Owatonna Tool Company: *See*—
Ogren, Robert S., 4,365,401, Cl. 29-243.530.
Owens-Corning Fiberglas Corporation: *See*—
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Owens-Illinois, Inc.: *See*—
Golden, Leonard W., Jr., 4,366,016, Cl. 156-218.000.
Weaver, Edward A., 4,366,252, Cl. 501-60.000.
Owens, Lloyd J., to Robbins Company, The. Earth boring apparatus. 4,365,677, Cl. 175-173.000.
Ozaki, Masaru: *See*—
Ona, Isao; and Ozaki, Masaru, 4,366,001, Cl. 106-287.110.
Ozaki, Yoshio: *See*—
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P C U K Produits Chimiques Ugine Kuhlmann: *See*—
Dessaint, Andre L., 4,366,299, Cl. 526-243.000.
Paccar Inc.: *See*—
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Pajer, Imre: *See*—
Takats, Ferenc; Lorand, Ferenc; Pajer, Imre; and Liptak, Laszlo, 4,366,095, Cl. 252-633.000.
Pajonk, Heinz; Hohne, Franz; and Ruthardt, Rolf, to Leybold Heraeus GmbH. Plant with a tundish for producing metal powder. 4,365,944, Cl. 425-7.000.
Palermo, Michael A.; and Mason, James L. Pedestal housing for cable television components. 4,365,723, Cl. 220-3.800.
Palmer, Jack A.: *See*—
Palmer, Leonard; and Palmer, Jack A., 4,365,458, Cl. 53-449.000.
Palmer, Leonard; and Palmer, Jack A., to Lened, Inc. Method and apparatus for filling sleeves with finished disc records and inserting the filled sleeves into jackets. 4,365,458, Cl. 53-449.000.
Palmquist, Ronald W., to Corning Glass Works. Electric furnace construction. 4,366,571, Cl. 373-30.000.
Pampouchidis, Georg; and Honig, Helmut, to Vianova Kunstharz, A.G. Auto-crosslinkable, cathodically depositable binders. 4,366,274, Cl. 523-415.000.
Pankoke, Werner, to Theodor Hymmen KG, Firma. Pressure application apparatus. 4,365,548, Cl. 100-154.000.
Papanek, Thomas H.; Egler, Mark S.; and Landau, Julian I., to Cordis Dow Corp. Automated diaphragm apparatus and method for control-

ling negative pressure hemodialysis treatment. 4,366,061, Cl. 210-647.000.
Papantoniou, Christos: *See—*
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Parker, Bernard J., to Mauri Brothers & Thomson (Aust) Pty. Limited. Edible colorant. 4,366,173, Cl. 426-20.000.
Parker, Dane K., to Goodyear Tire & Rubber Company, The. Process for production of 2,6-di-tert-alkenyl phenols. 4,366,331, Cl. 568-785.000.
Parker-Hannifin Corporation: *See—*
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Parkinson, William B.; and Lamprell, Trevor, to Lifting Gear Hire Limited. Lifting tackle. 4,365,834, Cl. 294-85.000.
Pascal, Marc, to Laboratoires Goella. Method for measuring serum cholesterol. 4,366,244, Cl. 435-11.000.
Pass, Reinhard: *See—*
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Pattein, Jacky P.: *See—*
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PCUK - Produits Chimiques Ugine Kuhlmann: *See—*
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Peacock, Donald G.: *See—*
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Pearce, David A.; and Mehok, John J., to Rhone-Poulenc Agrochimie. Deodorized organothiophosphorous and emulsifiable concentrates thereof. 4,366,103, Cl. 260-967.000.
Pearce, Donald E., to Rolls-Royce Limited. Combustion apparatus for gas turbine engines. 4,365,477, Cl. 60-737.000.
Pearlstein, Fred; and Evans, Carroll F., to United States of America, Army. Method and apparatus for removal of sodium carbonate from cyanide plating baths. 4,365,481, Cl. 62-123.000.
Pechinger, Ernst: *See—*
Biedermann, Horst H.; Hermann, Ferdinand; Pechinger, Ernst; and Sereinigg, Emil L. F., 4,365,902, Cl. 400-124.000.
Peczkowski, Jurgen: *See—*
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Pendergast, George G.: *See—*
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Perez, Lorenzo, Jr. Survival capsule module and methods of constructing and utilizing. 4,365,579, Cl. 114-349.000.
Perez, Sergio J. Policeman's night-stick. 4,365,808, Cl. 273-84.00R.
Perrichot, Daniel; and Faurie, Maurice, to SKF Compagnie d'Applications Mecaniques. Clutch thrust bearing unit with guided elastic self-alignment. 4,365,850, Cl. 308-26.000.
Perrine, Eugene B.: *See—*
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Pert, James C.: *See—*
Pert, James H.; Unger, Peter; Harris, Hervie L.; and Pert, James C., 4,365,629, Cl. 128-214.00D.
Pert, James H.; Unger, Peter; Harris, Hervie L.; and Pert, James C., to Hedbergska Stiftelsen. Platelet freezing bag. 4,365,629, Cl. 128-214.00D.
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Braslau, Norman; Freeouf, John L.; Pettit, George D.; Rupprecht, Hans S.; and Woodall, Jerry M., 4,366,493, Cl. 357-4.000.
Petzi, Fritz, to Ludwig Riedhammer GmbH & Co. KG. Continuous furnace for firing ceramic articles. 4,365,954, Cl. 432-198.000.
Pfeifer, William, to Dravo Corporation. Basket with swing away double locking handle. 4,365,725, Cl. 220-96.000.
Pfender, Georg, to MBK Maschinenbau GmbH. Machine for the manufacture of reinforcing bodies for concrete pipes. 4,365,657, Cl. 140-112.000.
Pfizer Inc.: *See—*
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Pfleiderer, Gerhard: *See—*
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Phillips Petroleum Company: *See—*
Klein, Fred T., 4,366,561, Cl. 367-77.000.
Piarulli, Vincent J.: *See—*
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Piatti, Sanzio P. V. Actuation of valves of internal combustion engines. 4,365,595, Cl. 123-90.530.
Pichler, Hans-Peter: *See—*
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Pilny, Richard J.; and Regulski, Thomas W., to Dow Chemical Co., The. Rendering porous structures impermeable by treatment with pH insensitive gelable compositions of amide polymers and composition. 4,366,194, Cl. 427-385.500.
Pilot Man-Nen-Hitsu Kabushiki Kaisha: *See—*
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Pioneer Electronic Corporation: *See—*
Suganuma, Hisashi, 4,366,450, Cl. 330-285.000.
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Tsukagoshi, Tsunehiro; Yokozeki, Shinichi; Hagiwara, Sumio; Uchidoi, Masataka; Yoshino, Toshikazu; and Arai, Yasuyuki, 4,366,205, Cl. 428-338.000.
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Plume, Robert W. Three cushion convertible seat-bed. 4,365,369, Cl. 5-38.000.
Pneumo Corporation: *See—*
Martin, Eugene J.; and Rollins, Thomas, 4,365,539, Cl. 92-17.000.
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Berger, Michael; and Magenheimer, John J., 4,366,227, Cl. 430-215.000.
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Pollack, William, to Westinghouse Electric Corp. Control of electrolyte fill to fuel cell stack. 4,366,211, Cl. 429-38.000.
Pollak, Philip, Jr.: *See*—
Albright, David B.; Schubert, Keith E.; and Pollak, Philip, Jr., 4,366,376, Cl. 235-101.000.
Pollard, Ernest, to Pollard V-Belt (Guernsey) Limited. Method of making joints in belting. 4,366,014, Cl. 156-157.000.
Pollard V-Belt (Guernsey) Limited: *See*—
Pollard, Ernest, 4,366,014, Cl. 156-157.000.
Pomfret, Colin T., to List, Hans. Water-cooled internal combustion engine. 4,365,593, Cl. 123-41.320.
Pope, John W. Method and apparatus for decoding and processing the informational content of multi-frequency signals. 4,366,348, Cl. 179-84.0VF.
Popp, Franz: *See*—
Hoyss, Franz; and Popp, Franz, 4,365,418, Cl. 33-185.00R.
Potts, Douglas L. Tool for crimping connector sleeves. 4,365,501, Cl. 72-416.000.
Potvin, Alfred M., to Mita Wood Products Inc. Miter box construction. 4,365,531, Cl. 83-767.000.
Poulain, Pierre: *See*—
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Poulin, Ted M.: *See*—
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PPG Industries, Inc.: *See*—
Korach, Malcolm; and Chamberlin, Ronald D., 4,366,041, Cl. 204-252.000.
Slabach, John C., Jr., 4,365,985, Cl. 65-106.000.
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Prameta Prazisionsmetall -und Kunststofferzeugnisse G. Baumann & Company: *See*—
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Preh Elektrofeinmechanische Werke Jakob Preh Nachf. GmbH & Co.: *See*—
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Princiotta, Raymond A.; and Salvucci, Antonio. Forming a pocket welt. 4,365,735, Cl. 228-38.000.
Printos B.V. of N.L.: *See*—
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Probex, Inc.: *See*—
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Procter & Gamble Company, The: *See*—
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Proform, Inc.: *See*—
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Proll & Lohmann Betriebs - GmbH: *See*—
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Pronk, Jacobus N.: *See*—
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Purex Corporation: *See*—
Ortega, Robert, 4,365,366, Cl. 4-493.000.
Pustoch, Rene. Melon cutting tool. 4,365,415, Cl. 30-314.000.
Pye (Electronic Products) Ltd.: *See*—
Cooper, Geoffrey A.; and Ward, Donald W., 4,366,408, Cl. 313-193.000.
Quaker Oats Company, The: *See*—
Everett, George S., 4,366,267, Cl. 523-144.000.
Quelch, Albert G. B. Contour bottle carrier. 4,365,835, Cl. 294-87.200.
Quick, Thomas R. Faucet stem nut splitter. 4,365,413, Cl. 30-272.00R.
Raab, Simon. PMMA Coated bone connective prostheses and method of forming same. 4,365,359, Cl. 3-1.912.
Raden, Daniel S.: *See*—
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Rader, Philip C.; Frabotta, Dante; and Hanson, Robert W., to Combustion Engineering, Inc. Process for limiting chloride buildup in SO_2 scrubber slurry. 4,366,133, Cl. 423-242.000.
Radeztsky, Delmer L.: *See*—
Dudrey, Denis J.; Herman, John T.; Wolde-Michael, Girma; and Radeztsky, Delmer L., 4,366,069, Cl. 210-788.000.
Radomski, Thomas A.: *See*—
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Radus, Raymond J.: *See*—
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Ramco Steel, Inc.: *See*—
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Ramel, Francois; and Rousseau, Alain, to Effa Etudes. Linear differential foucault current detector serving for measuring small displacements of a metallic element. 4,365,517, Cl. 73-722.000.
Ramspacher, Robert J., Jr., to RCA Corporation. Sheet material separation construction. 4,366,198, Cl. 428-43.000.
Ramuz, Henri, to Hoffmann-La Roche Inc. Imidazole derivatives. 4,366,160, Cl. 424-263.000.
Ranalli, Charles, to Nixdorf Computer Corporation. Method and apparatus for formatting a memory disk. 4,366,511, Cl. 360-39.000.
Rapp, Charles F., to Owens-Corning Fiberglas Corporation. Glass compositions and their fibers. 4,366,251, Cl. 501-36.000.
Rastas, Jussi K.; and Nyberg, Jens R., to Outokumpu Oy. Hydrometallurgical process for the recovery of lead, silver and gold, as well as zinc, from impure jarosite residues of an electrolytic zinc process. 4,366,127, Cl. 423-26.000.
Rath, Heinrich B., to Lucas Industries Limited. Disc brake and friction pad assembly therefor. 4,365,695, Cl. 188-73.390.
Rathmann, Soren H. Emergency power unit. 4,366,390, Cl. 307-66.000.
Ratsko, Istvan; Ivony, Jozsef; Madi, Jeno; and Karaszi, Gyorgy, to Autoipari Kutato Intezet; and Ikarus Karosszeria es Jarmugyar. Equipment for influencing the jacknifing angle of articulated motor vehciles. 4,365,685, Cl. 180-135.000.
Rauch, Walter, to Siemens Aktiengesellschaft. Method for synchronizing code machines which are operated within the framework of a block transmission network. 4,366,573, Cl. 375-106.000.
Rauchschwalbe, Gunter; Blank, Heinz U.; Mannes, Karl; and Mayer, Dietmar, to Bayer Aktiengesellschaft. Process for the preparation of chloroformic acid aryl esters. 4,365,102, Cl. 260-463.000.
Rauhut, Michael M.; and Mohan, Arthur G., to American Cyanamid Company. Sulfonated rubrene and aqueous chemiluminescent compositions containing the same. 4,366,079, Cl. 252-188.3CL.
Ray, Ranjan, to Allied Corporation. Complex boride particle containing alloys. 4,365,994, Cl. 75-123.00B.
Raychem Corporation: *See*—
Carlomagno, William D., 4,365,400, Cl. 29-235.000.
Changani, Pushpkumar D.; Peacock, Donald G.; and Roberts, David, 4,366,201, Cl. 428-157.000.
Rayl, Richard N. Body puppet and teaching aid. 4,365,353, Cl. 2-115.000.
Raymond, Bernard P. M., to Bertin & Cie. Method for the production of furfural from vegetable matter. 4,366,322, Cl. 549-489.000.
Raynolds, Peter W., to Eastman Kodak Company. Process for the separation of meta and para isomers of the sodium salt of bromophenol. 4,366,329, Cl. 568-755.000.
RCA Corporation: *See*—
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Jolly, Stuart T., 4,365,588, Cl. 118-732.000.
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Ramspacher, Robert J., Jr., 4,366,198, Cl. 428-43.000.
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Re-al, Inc.: *See*—
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Ditzig, Albert F., 4,366,351, Cl. 200-16.00R.
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Reed, John T.; and Stubbart, John C., to Singer Company, The. Probe impact sensor for a simulator. 4,365,960, Cl. 434-38.000.
Reed, Martin C.: *See*—
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Reed, Stewart D.: *See*—
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Regelsberger, Wolfgang, to Hilti Aktiengesellschaft. Safety clutch for power-operated hand-held tool. 4,365,962, Cl. 464-39.000.
Regie Nationale des Usines Renault: *See*—
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Regulski, Thomas W.: *See*—
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Reibel, Paul F., to United States of America, Army. Method and system for preventing base separation of cast explosives in projectiles. 4,365,556, Cl. 102-307.000.
Reid, Cedric N.; and Anderson, George W. Rackets. 4,365,806, Cl. 273-73.00C.
Rein, David A.: *See*—
Johnson, Nolton C., Jr.; and Rein, David A., 4,365,530, Cl. 83-490.000.
Reinking, Klaus: *See*—
Freitag, Dieter; Nouvertne, Werner; Reinking, Klaus; Tacke, Peter; Kleiner, Frank; and Schmidt, Manfred, 4,366,276, Cl. 524-94.000.
Reliance Electric Company: *See*—
Baker, Richard H., 4,366,522, Cl. 361-91.000.
Hussey, Sam W., 4,366,389, Cl. 307-66.000.

Krome, Edward F., Jr., 4,365,964, Cl. 474-28.000.

Remes, Paul A.; and Jorgensen, Brian L., to Overhead Door Corporation. Transmitter with buzzer. 4,366,482, Cl. 340-825.690.

Rendell, Stanley E., to Sterlingworth Music, Inc. Modified musical instrument string. 4,365,534, Cl. 84-297.00S.

Research Foundation of State Univ. of NY: *See*—
Golub, Lorne M.; and Kaslick, Ralph S., 4,366,144, Cl. 424-9.000.

Resnick, Bruce M., to GAF Corporation. Fungicidal biphenyl esters, mixtures thereof and method of use. 4,366,171, Cl. 424-313.000.

Respiratory Care, Inc.: *See*—
Nowacki, Christopher A., 4,366,105, Cl. 261-35.000.

Resz, Raoul; Schaer, Walter; and El Sayed, Aziz, to Bayer Aktiengesellschaft. Pulverulent coating materials. 4,366,288, Cl. 525-60.000.

Retz, Philip. Vertical wind turbine power generating tower. 4,365,929, Cl. 415-2.00R.

Retzlaff, Wilfred F., to L. D. Schreiber Cheese Co., Inc. Apparatus for making large sized blocks of cheese. 4,365,545, Cl. 99-459.000.

Reusch, Heinz; and Kreikenbohm, Robert, to Stiebel Eltron GmbH & Co. KG. Method for charging and discharging a latent-heat storage medium and heat storage. 4,365,662, Cl. 165-10.000.

Reuter, Manfred: *See*—
Schopper, Bernd; Tandler, Peter; Hartmann, Herbert; and Reuter, Manfred, 4,365,846, Cl. 303-56.000.

Reynolds, Martin M.; and Young-Bandala, Linda, to Liquid Carbonic Corporation. Freezing baked bread goods. 4,366,178, Cl. 426-393.000.

Rhodes, Melvin H., to Rockwell International Corporation. Velocity sensing pulse pair servo apparatus. 4,366,422, Cl. 318-561.000.

Rhone-Poulenc Agrochimie: *See*—
Pearce, David A.; and Mehok, John J., 4,366,103, Cl. 260-967.000.

Rhone-Poulenc-Textile: *See*—
Grosjean, Pierre, 4,366,199, Cl. 428-114.000.

Rich, Dennis J.; and Holtz, Frederick C., Jr., to Valeron Corporation, The. High toughness ceramic cutting tool. 4,366,254, Cl. 501-89.000.

Richardson, John, to Selectro-Vision, Ltd. Gaming board. 4,365,810, Cl. 273-237.000.

Richardson, Kenneth J., to Eaton Corporation. Liquid crystal device for direct display of analog information. 4,365,868, Cl. 350-334.000.

Richter, Gerhard; Luft, Gunter; and Gebhardt, Ulrich, to Siemens Aktiengesellschaft. Method for determining the concentration of sugar using an electrocatalytic sugar sensor. 4,366,033, Cl. 204-1.00T.

Ricks, Herbert E.; and Sverdrup, Edward F., to Westinghouse Electric Corp. Hard chromium plating process for cobalt-chromium-tungsten alloys. 4,366,034, Cl. 204-32.00R.

Ricoh Company, Ltd.: *See*—
Hosaka, Masao; Ogino, Yoshitaka; and Yanagawa, Nobuyuki, 4,365,888, Cl. 355-14.00R.
Kakitani, Yohtaro; Kaneko, Tamaki; Ikeda, Sunao; Okuzawa, Tugio; Kikuchi, Hideo; and Hibi, Kunio, 4,365,887, Cl. 355-14.00R.
Yamaguchi, Shingo, 4,366,489, Cl. 346-76.0PH.

Riddle, George H. N., to RCA Corporation. Video disc stylus suspension apparatus. 4,366,563, Cl. 369-43.000.

Riddle, John B.: *See*—
Main, David T.; Riddle, John B.; and Allen, Rod H., 4,366,481, Cl. 340-825.540.

Riedel, Rudolph T. Toilet flush control using a hollow crown instant close flapper valve. 4,365,364, Cl. 4-378.000.

Riederauer, Szilard: *See*—
Czegledi, Bela; Csovari, Mihaly; Erdelyi, Miklos; Streker, Lajos; Toth, Istvan; Szabo nee Mogyorosi, Katalin; Riederauer, Szilard; and Szentgyorgyi, Geza, 4,366,129, Cl. 423-112.000.

Riegger, Helmut: *See*—
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Riegler, Albert, to Ciba-Geigy Corporation. Process for the production of colorant preparations and the colorant preparations obtained thereby. 4,366,271, Cl. 523-333.000.

Rieter Machine Works, Ltd.: *See*—
Schellenberg, Hans; Schenkel, Eduard; Schwander, Andreas; and Thalmann, Dieter, 4,365,468, Cl. 57-291.000.
Schneeberger, Ruedi; and Schwander, Andreas, 4,365,765, Cl. 242-43.00R.

Riggs, Arthur D., to Genentech, Inc. Method for microbial polypeptide expression. 4,366,246, Cl. 435-68.000.

Rikagaku Kenkyusho: *See*—
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Riley, David J.; and McGreavy, Gerald, to Chloride Silent Power Limited. Method and apparatus for filling sodium into sodium sulphur cells. 4,365,409, Cl. 29-623.200.

Rind, Bruce. Expandable oral airway. 4,365,625, Cl. 128-207.140.

Riquart, Christian: *See*—
Carre, Jean J.; and Riquart, Christian, 4,365,844, Cl. 303-6.00C.

Ritchey, Eugene B. Display panel and method of making same. 4,365,436, Cl. 40-615.000.

Ritter, Christoph: *See*—
Marsoner, Hermann; and Ritter, Christoph, 4,366,040, Cl. 204-195.00R.

Ritums, Janis A.: *See*—
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Robert Bosch GmbH: *See*—
Knapp, Heinrich; Sauer, Rudolf; Hans, Waldemar; Linssen, Mathias; Peczkowski, Jurgen; and Krauss, Rudolf, 4,365,747, Cl. 239-125.000.

Wessel, Wolf; Sautter, Wilfried; and Brettschneider, Johannes, 4,365,605, Cl. 123-502.000.

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Robinson, Earl F.: *See*—
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Robinson, Edward L., Jr.; Fardal, Randolph G.; and Anderson, David, to International Harvester Co. Automatic alternating marker system. 4,365,672, Cl. 172-2.000.

Robinson, Kenneth B., to Thorn Electrical Industries Limited. Electric filament lamps. 4,366,411, Cl. 313-272.000.

Robinson, Roy M. Batting game. 4,365,814, Cl. 273-317.000.

Rockwell International: *See*—
Ho, William W.; Hall, William F.; Fisher, Harry W.; and Perrine, Eugene B., 4,365,503, Cl. 73-3.000.

Rockwell International Corporation: *See*—
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Molina, Orlando G., 4,365,516, Cl. 73-644.000.
Rhodes, Melvin H., 4,366,422, Cl. 318-561.000.

Rodden, Philip J.; and Duffy, Richard J. Locking patch machine. 4,366,190, Cl. 427-183.000.

Rogers, Alfred N.; Awerbuch, Leon; and May, Sherman C., to Bechtel International Corporation. Stabilization of softened water with self-generated CO_2. 4,366,066, Cl. 210-696.000.

Rogus, Joseph A.: *See*—
Frey, G. Robert; Rogus, Joseph A.; Johnson, Paul R.; and King, Richard A., 4,365,682, Cl. 180-89.130.

Rohm and Haas Company: *See*—
Miller, George A.; and Chan, Hak-Foon, 4,366,165, Cl. 424-269.000.

Roller, George J., to Xerox Corporation. Toggle arm inverter. 4,365,794, Cl. 271-186.000.

Rollins, Thomas: *See*—
Martin, Eugene J.; and Rollins, Thomas, 4,365,539, Cl. 92-17.000.

Rolls-Royce Limited: *See*—
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Romec Environmental Research & Development, Inc.: *See*—
O'Connor, Rodney J., 4,366,063, Cl. 210-652.000.

Rosa, John; and Radus, Raymond J., to Westinghouse Electric Corp. AC/DC or DC/AC Converter system with improved AC-line harmonic reduction. 4,366,532, Cl. 363-69.000.

Rosenberg, Harold; and Tsai, Tsu-tzu, to United States of America, Air Force. Polymerization of arylene bis-silanols. 4,366,323, Cl. 556-433.000.

Rosendahl, Evert. Tin opener. 4,365,417, Cl. 30-422.000.

Rosler, Helmut; Muhlbauer, Otto; and Bigall, Klaus D., to Siemens Aktiengesellschaft. Semiconductor circuit for transforming sequences of periodic a-c signals. 4,366,396, Cl. 307-261.000.

Ross, Heinz C.: *See*—
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Ross, Roger J., to Singer Company, The. Underbed thread trimmer and controlled single-operation cam mechanism therefor. 4,365,568, Cl. 112-291.000.

Rossberg, Shelton R., to Ramco Steel, Inc. Surface drainage culvert. 4,365,911, Cl. 405-43.000.

Rothbuhr, Lothar: *See*—
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Rowe, Lacy A.: *See*—
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Rowley, Gerald L.: *See*—
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Rubbermaid Applied Products Inc.: *See*—
Borders, Ernest D., 4,365,922, Cl. 414-406.000.

Rubinshtein, Efim: *See*—
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Rubinstein, Edward; and Rubinshtein, Efim. Guard plate. 4,365,491, Cl. 70-425.000.

Rubner, Roland: *See*—
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Ruehl, William E.: *See*—
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Ruggieri, Albert P.; Marinaccio, Frank J.; Campbell, Neil E.; Allen, Wayne; Moum, Stanley; Malatesta, Paul F.; Pietrowski, Joseph J.; and Schwartz, Leonard H., to Lab Products, Inc. Ventilated animal cage rack. 4,365,590, Cl. 119-15.000.

Rupchock, Patricia A.; and Tyhach, Richard J., to Miles Laboratories, Inc. Stabilization of glucose oxidase apoenzyme. 4,366,243, Cl. 435-7.000.

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Rush, Donald L. Trailer connecting running gear. 4,365,820, Cl. 280-411.00C.

Russ, Paul E., Sr., to Gates Rubber Company, The. V-Block belt. 4,365,965, Cl. 474-244.000.

Ruter, Jorn, to Chemische Werke Huls A.G. Process for uniformly blending additives into thermoplastic synthetic resins. 4,366,270, Cl. 523-307.000.

Ruthardt, Rolf: *See*—
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Ruti Machinery Works Ltd.: *See*—
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S&C Electric Company: *See*—
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S.U.N. Engineering, Inc.: *See*—
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Sacks, Stephen J.: *See*—
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Sadigh-Behzadi, Amir-Akbar, to Thomas & Betts Corporation. Integral housing insulation-piercing connector. 4,365,860, Cl. 339-97.00P.

Saiji, Mitsuhiro: *See*—
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Saito, Akinori: *See*—
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Saito, Itaru, to Minolta Camera Kabushiki Kaisha. Electrostatic image recording process using prehisteresis uniform charging and light exposure pretreatment. 4,366,220, Cl. 430-31.000.

Saito, Tadao; Kishi, Takao; and Kakuta, Yoshiyuki, to Yoshino Kogyosho Co., Ltd. Atomizer. 4,365,729, Cl. 222-321.000.

Saito, Tadao; and Tasaki, Takaharu, to Yoshino Kogyosho Co., Ltd. Trigger type liquid injector. 4,365,751, Cl. 239-333.000.

Sakai, Kunio: *See*—
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Sakurai, Hideo: *See*—
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Sakurai, Jinichi: *See*—
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Salvadori, Bruno, to Societa' Pneumatici Pirelli S.p.A. Vulcanizing presses for tires. 4,365,945, Cl. 425-43.000.

Salvucci, Antonio: *See*—
Princiotta, Raymond A.; and Salvucci, Antonio, 4,365,735, Cl. 228-38.000.

Salzberg, Edward. Microwave hybrid phase modulators. 4,366,454, Cl. 333-164.000.

Samuels, Alvin: *See*—
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Samuels, David: *See*—
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Samuelsen, Per, to A/S Finsam International, Inc. Arrangement in an ice machine. 4,365,485, Cl. 62-320.000.

Sandling, Michael J., to Xomox Corporation. Valve assembly. 4,365,646, Cl. 137-375.000.

Sandoz, Inc.: *See*—
Stoopak, Samuel B.; Kornblum, Saul S.; and Jacobs, Allen L., 4,366,145, Cl. 424-37.000.
Tomesch, John C., 4,366,154, Cl. 424-247.000.

Sano, Shunichi; Shinozaki, Toshiaki; and Mori, Ichiro, to VLSI Technology Research Association. Electron beam type pattern transfer apparatus. 4,366,383, Cl. 250-492.300.

Sanpei, Hideo: *See*—
Akai, Yoshimi; Hirose, Masahiko; and Sanpei, Hideo, 4,366,208, Cl. 428-421.000.

Sanstrom, Grant H. Toilet bowl odor educting and powered exhaust system. 4,365,361, Cl. 4-213.000.

Santini, John, to EHV Systems, Inc. Battery gassing detector. 4,366,431, Cl. 320-46.000.

Sanzenbacher, Charles W.: *See*—
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Sapporo Breweries Limited: *See*—
Soma, Eichi; Kobayashi, Kohei; Karakawa, Takuro; Kato, Shigeyoshi; and Uchida, Kiichi, 4,366,308, Cl. 536-128.000.

Sargent, Jack, to Innovative Design, Inc. Apparatus and method for counting repetitive marks on a running web. 4,366,372, Cl. 235-92.0PL.

Sarli, Vito J.: *See*—
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Sarre, Olga: *See*—
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Sasaki, Kan: *See*—
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Sasayama, Takao: *See*—
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Sasse, Klaus: *See*—
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Sato, Eiya; and Yamagishi, Tsukasa, to Asahi-Dow Limited. Expanded cross-linked polyethylene particle, a molded product thereof and the methods thereof. 4,366,263, Cl. 521-60.000.

Sato, Kanichi: *See*—
Yamanishi, Akio; Sato, Kanichi; and Higashino, Takashi, 4,366,268, Cl. 523-144.000.

Sato, Masaaki; Miyaji, Kazumi; Yoshida, Masahide; Fukuoka, Norio; Nakasho, Kazuo; and Furuta, Kenji, to Olympus Optical Company Limited. Magnetic reproducing apparatus. 4,366,514, Cl. 360-74.400.

Sato, Mitsuyoshi: *See*—
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Sato, Tetsuo, to Hitachi, Ltd. Integrated voltage control variable gain circuit and a signal transmission circuit using the same. 4,366,449, Cl. 330-278.000.

Sato, Toshiaki: *See*—
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Satoh, Ken; and Orita, Shunichi, to Olympus Optical Company Limited. Tape recorder with noise blanking circuit. 4,366,513, Cl. 360-66.000.

Satoh, Seiichi, to Tokyo Shibaura Denki Kabushiki Kaisha. High frequency heating apparatus. 4,366,357, Cl. 219-10.55B.

Satoshi, Hanai: *See*—
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Scanray Corporation: *See*—
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Scarlett, John C.; and Sanzenbacher, Charles W., to Midrex Corporation. Apparatus for the direct reduction of iron in a shaft furnace using gas from coal. 4,365,789, Cl. 266-87.000.

Schade, Otto H., Jr., to RCA Corporation. Temperature-independent current trimming arrangement. 4,366,444, Cl. 330-256.000.

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Schaming, Edward J. Descaling nozzle. 4,365,758, Cl. 239-590.000.

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Schellenberg, Hans; Schenkel, Eduard; Schwander, Andreas; and Thalmann, Dieter, to Rieter Machine Works, Ltd. False twist machine. 4,365,468, Cl. 57-291.000.

Schellenberg, Walter, to Max Sandherr AG. Container closure. 4,365,457, Cl. 53-412.000.

Schellhaas, Rolf, to Jorg, Gunther W. Surface-effect aerofoil boat. 4,365,578, Cl. 114-272.000.

Schenck, Ray B. Slash recovery system. 4,365,927, Cl. 414-729.000.

Schenkel, Eduard: *See*—
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Schexnayder, Lawrence F.; and Spivey, William J., Jr., to Caterpillar Tractor Co. Hydrostatic transmission having an overspeed control. 4,365,473, Cl. 60-447.000.

Schleger, Siegfried: *See*—
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Schlumpf, Raymond J. Storage rack for assemblages of nuclear fuel elements. 4,366,115, Cl. 376-272.000.

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Schmider, Fritz, to Papst Motoren KG. Tachogenerator having stray flux cancelling output coils. 4,366,405, Cl. 310-268.000.

Schmidt, Curt, to Kernforschungszentrum Karlsruhe GmbH. Liquid helium pump. 4,365,942, Cl. 417-412.000.
Schmidt, Manfred: *See*—
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Schopper, Bernd; Tandler, Peter; Hartmann, Herbert; and Reuter, Manfred, to ITT Industries, Inc. Dual-circuit pressure control valve for hydraulic brake systems. 4,365,846, Cl. 303-56.000.
Schubert, Johannes M.: *See*—
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Schubert, Keith E.: *See*—
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Schulz, Arthur C.; Cook, Edward H., Jr.; and Viswanathan, Krishnan, to Occidental Chemical Corporation. Method of increasing useful life expectancy of microporous separators. 4,366,037, Cl. 204-98.000.
Schulz, Donald N.: *See*—
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Schumacher, Gerd: *See*—
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Schutt, Jurgen M., to Instituto Venezolano de Investigaciones Cientificas (IVIC). Implement for the harvesting of seed-producing plants by mechanical harvester. 4,365,461, Cl. 56-14.300.
Schwander, Andreas: *See*—
Schellenberg, Hans; Schenkel, Eduard; Schwander, Andreas; and Thalmann, Dieter, 4,365,468, Cl. 57-291.000.
Schneeberger, Ruedi; and Schwander, Andreas, 4,365,765, Cl. 242-43.00R.
Schwartz, Alan R.: *See*—
Martin, Brice E.; and Schwartz, Alan R., 4,366,141, Cl. 423-561.00B.
Schwartz, Leonard H.: *See*—
Ruggieri, Albert P.; Marinaccio, Frank J.; Campbell, Neil E.; Allen, Wayne; Moum, Stanley; Malatesta, Paul F.; Pietrowski, Joseph J.; and Schwartz, Leonard H., 4,365,590, Cl. 119-15.000.
Schwarz, Helmut, to Harris Corporation. Orthogonal mode transducer having interface plates at the junction of the waveguides. 4,366,453, Cl. 333-117.000.
Schwenda, Gerhard: *See*—
Lange, Gerhard; Sippekamp, Oskar; and Schwenda, Gerhard, 4,366,412, Cl. 313-325.000.
Science and Technology Agency: *See*—
Ohta, Hiroshi, 4,366,494, Cl. 357-5.000.
SCM Corporation: *See*—
Mueller, Hans W.; Shattuck, Richard E.; Cryder, Albert H.; and Nelson, John L., 4,365,904, Cl. 400-568.000.
Scott Paper Company: *See*—
Gotchel, Joel P., 4,365,425, Cl. 34-54.000.
Scott, Paul R., to Shell Oil Company. Storage of liquid hydrocarbons in salt dome caverns. 4,365,978, Cl. 55-47.000.
Scott, Peter A. J., to Associated Engineering Limited. Means providing coolant between elements of radial face seals. 4,365,815, Cl. 277-22.000.
Scranton Manufacturing Co., Inc.: *See*—
McLaughlin, Bruce I., 4,365,841, Cl. 298-27.000.
Sea-Log Corporation: *See*—
Stiles, Kenneth M., 4,365,865, Cl. 350-96.230.
Sedat, Georges A. Smoke-producing pyrotechnic composition and its application. 4,366,010, Cl. 149-19.600.
Seifert, Rolf. Heat exchanger. 4,365,666, Cl. 165-104.290.
Seilly, Alec H., to Lucas Industries Limited. Electromagnetic devices. 4,366,401, Cl. 310-12.000.
Seino, Takashi: *See*—
Ohkawa, Koue; Fujii, Shin; and Seino, Takashi, 4,366,269, Cl. 523-148.000.
Seki, James; and Chung, Damon J. Hydraulic-lift-barbecue cooking apparatus. 4,365,613, Cl. 126-25.00A.
Sekine, Kenji: *See*—
Tachibana, Akira; Endo, Akira; and Sekine, Kenji, 4,366,546, Cl. 364-571.000.
Selectro-Vision, Ltd.: *See*—
Richardson, John, 4,365,810, Cl. 273-237.000.
Seliverstov, Konstantin B.: *See*—
Brounshtein, Viktor B.; Petrov, Vladimir I.; Otsup, Rudolf R.; Ignatieva, Galina P.; Kozlovsky, Vladlen V.; Lipshits, Leonard Y.; Zhuravlev, Oleg V.; Koba, Mikhail G.; Seliverstov, Konstantin B.; Igisheva, Tamara A.; Drobyazko, Petr A.; Motin, Anatoly I.; Fot, Viktor D.; Yakimov, Lev T.; and Kuznetsov, Boris G., 4,366,124, Cl. 422-278.000.
Senatore, Peter J.: *See*—
Korosy, Louis B.; and Senatore, Peter J., 4,366,134, Cl. 423-243.000.
Seno, Eugene T.: *See*—
Baltz, Richard H.; and Seno, Eugene T., 4,366,247, Cl. 435-124.000.
Senshu, Takao: *See*—
Hatada, Toshio; Senshu, Takao; Arai, Akira; Harada, Fumio; Matsuzaki, Atsushi; Futawatari, Hajime; Imaizumi, Yutaka; and Takeda, Sumiyoshi, 4,365,667, Cl. 165-152.000.
Sereinigg, Emil L. F.: *See*—
Biedermann, Horst H.; Hermann, Ferdinand; Pechinger, Ernst; and Sereinigg, Emil L. F., 4,365,902, Cl. 400-124.000.
Seto, Haruo: *See*—
Mizutani, Taku; Yamagishi, Michio; Mizoue, Kazutoshi; Kawashima, Akira; Omura, Sadafumi; Otake, Noboru; and Seto, Haruo, 4,366,311, Cl. 536-123.000.
Shaber, Gary S.; and Buenzli, Charles W., Jr., to Probex, Inc. Method, apparatus and film strip of particular design for rapid test of a film processor. 4,365,895, Cl. 356-444.000.
Sharp Kabushiki Kaisha: *See*—
Iwase, Tetsuo; and Saiji, Mituhiro, 4,366,477, Cl. 340-792.000.
Kanatani, Yoshiharu, 4,366,504, Cl. 358-241.000.
Oguri, Ichiro; and Koyama, Yoshihiro, 4,366,005, Cl. 134-25.200.
Shattuck, Richard E.: *See*—
Mueller, Hans W.; Shattuck, Richard E.; Cryder, Albert H.; and Nelson, John L., 4,365,904, Cl. 400-568.000.
Shaw, William C., to IMAX Systems Corporation. Field flattener lens element assembly. 4,365,877, Cl. 352-184.000.
Sheehan, Robert K. Connector for a helically grooved electrical conductor. 4,366,344, Cl. 174-65.00R.
Shell Oil Company: *See*—
Scott, Paul R., 4,365,978, Cl. 55-47.000.
Wu, Hsi L., 4,365,563, Cl. 110-186.000.
Shen, Chou-Ming. Timer-controlled speed changing device for electric fans. 4,366,425, Cl. 318-779.000.
Shepard, Charles L.: *See*—
Graham, Clarence O., Jr.; Shepard, Charles L.; and Kullman, Russell M. H., 4,365,464, Cl. 57-12.000.
Sherritt Gordon Mines Limited: *See*—
Weir, Donald R.; and Masters, Ian M., 4,366,128, Cl. 423-87.000.
Shida, Masami: *See*—
Mouri, Yasunori; Suda, Seiji; Shida, Masami; and Furuhashi, Toshio, 4,366,541, Cl. 364-431.050.
Shields, Robert M.; and Shields, Ted A. Novelty mirror. 4,365,798, Cl. 272-8.00M.
Shields, Ted A.: *See*—
Shields, Robert M.; and Shields, Ted A., 4,365,798, Cl. 272-8.00M.
Shigemura, Yutaka: *See*—
Kimura, Hiroshi; Hisajima, Masahiko; Shigemura, Yutaka; and Irie, Yoichiro, 4,365,893, Cl. 355-75.000.
Shiibayashi, Masao: *See*—
Tojo, Kenji; Hosoda, Taisei; Ikegawa, Masato; and Shiibayashi, Masao, 4,365,941, Cl. 417-372.000.
Shikata, Makoto; Osano, Hisashi; and Morozumi, Takuro, to Fuji Jukogyo Kabushiki Kaisha; and Nissan Motor Co., Ltd. System for controlling air-fuel ratio. 4,365,603, Cl. 123-440.000.
Shikimori, Yasuhiro: *See*—
Kawamura, Sukeyoshi; Shimizu, Koichi; and Shikimori, Yasuhiro, 4,366,272, Cl. 523-335.000.
Shima, Ichiji; Teshima, Hiroshi; Koizumi, Takayuki; and Inoue, Satoru, to Mitsubishi Denki Kabushiki Kaisha; Shima, Ichiji; and Teshima, Hiroshi. Judging system for detecting failure of machine. 4,366,544, Cl. 364-550.000.
Shimada, Masaaki: *See*—
Kojima, Sadao; Shimada, Masaaki; Sakai, Kunio; and Horie, Katuo, 4,366,142, Cl. 423-640.000.
Shimizu, Hirokazu; Itoh, Kunio; Sugino, Takashi; and Wada, Masaru, to Matsushita Electric Industrial Co. Ltd. Semiconductor laser. 4,366,568, Cl. 372-45.000.
Shimizu, Koichi: *See*—
Kawamura, Sukeyoshi; Shimizu, Koichi; and Shikimori, Yasuhiro, 4,366,272, Cl. 523-335.000.
Shimizu, Mutsuo: *See*—
Habata, Kiichi; Ichikawa, Kesazi; and Shimizu, Mutsuo, 4,366,324, Cl. 556-460.000.
Shimizu, Toyoji: *See*—
Tokorozawa, Sadao; and Shimizu, Toyoji, 4,365,728, Cl. 222-209.000.
Shin-Etsu Chemical Co. Ltd.: *See*—
Habata, Kiichi; Ichikawa, Kesazi; and Shimizu, Mutsuo, 4,366,324, Cl. 556-460.000.

Shinada, Hidehiro: *See*—
Nieda, Yasuhiro; Honda, Kiyokazu; and Shinada, Hidehiro, 4,366,409, Cl. 313-221.000.

Shinagawa, Yukio; Ohtani, Sumio; Suematsu, Koichi; and Kawaguchi, Hideo, to Fuji Photo Film Co., Ltd. Polyester base drafting film with nitrocellulose and polymethylmethacrylate layer. 4,366,239, Cl. 430-533.000.

Shinozaki, Toshiaki: *See*—
Sano, Shunichi; Shinozaki, Toshiaki; and Mori, Ichiro, 4,366,383, Cl. 250-492.300.

Shiono, Shigeo: *See*—
Masuda, Ikuro; Shiraishi, Hisayoshi; Ogawa, Seiichiro; Shiono, Shigeo; Sakurai, Jinichi; and Yuminaka, Takeo, 4,366,478, Cl. 340-825.000.

Shionogi & Co., Ltd.: *See*—
Yoshioka, Mitsuru; Uyeo, Shoichiro; Hamashima, Yoshio; Kikkawa, Ikuo; Tsuji, Teruji; and Nagata, Wataru, 4,366,316, Cl. 544-90.000.

Shiozaki, Hiroyuki; Mikami, Masao; Imai, Isao; and Iwanami, Toshio, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha. Rolling process. 4,365,496, Cl. 72-249.000.

Shiozaki, Ken; Tsuge, Kazunori; and Ohnishi, Akira, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Cylindrical molded catalyst. 4,366,093, Cl. 252-477.00R.

Shiozawa, Kazuo: *See*—
Hazama, Kiyoaki; Shiozawa, Kazuo; and Matsumoto, Koichi, 4,365,881, Cl. 354-76.000.

Shiraishi, Hisayoshi: *See*—
Masuda, Ikuro; Shiraishi, Hisayoshi; Ogawa, Seiichiro; Shiono, Shigeo; Sakurai, Jinichi; and Yuminaka, Takeo, 4,366,478, Cl. 340-825.000.

Shiu, Tony L., to RCA Corporation. Bar type channel identification apparatus for a television receiver. 4,366,502, Cl. 358-192.100.

Shmelkin, Mark. Device for squeezing-out viscous materials from tubes made of plastics. 4,365,727, Cl. 222-97.000.

Shoji, Shigemasa, to TDK Electronic Co., Ltd. Magnetic tape cassette. 4,365,769, Cl. 242-199.000.

Showell, Graham A.: *See*—
Evans, John M.; Showell, Graham A.; and F.ke, Charles S., 4,366,163, Cl. 424-267.000.

Shumaker, John F., to J. I. Case Company. Bucket mounted footing tool. 4,365,428, Cl. 37-103.000.

Shuttleworth, Leslie; and Mullen, David, to Eastman Kodak Company. Preparation of 2-halo-3-nitro-5-acyl thiophenes and intermediate compounds. 4,366,321, Cl. 549-68.000.

Sieckman, Walter, to Pennsylvania Engineering Corporation. Method of treating ferrous metal. 4,365,992, Cl. 75-60.000.

Siefert, Roland. Electrically adjustable apparatus for motor vehicle rear view mirror. 4,365,867, Cl. 350-289.000.

Siegal, Burton L.; and Waxman, Jay S., to Kiwi Coders Corporation. Article imprinting apparatus. 4,365,554, Cl. 101-333.000.

Siemens Aktiengesellschaft: *See*—
Ahne, Hellmut; Kuhn, Eberhard; and Rubner, Roland, 4,366,230, Cl. 430-325.000.
Block, Harry; and Wiesenbacher, Rudolf, 4,366,497, Cl. 357-82.000.
Jagle, Bruno, 4,366,345, Cl. 174-52.00S.
Lange, Gerhard; Sippekamp, Oskar; and Schwenda, Gerhard, 4,366,412, Cl. 313-325.000.
Rauch, Walter, 4,366,573, Cl. 375-106.000.
Richter, Gerhard; Luft, Gunter; and Gebhardt, Ulrich, 4,366,033, Cl. 204-1.00T.
Rosler, Helmut; Muhlbauer, Otto; and Bigall, Klaus D., 4,366,396, Cl. 307-261.000.
Vogelsberg, Dieter, 4,365,469, Cl. 57-293.000.
Weghaupt, Erich; Intichar, Lutz; and Schnapper, Christoph, 4,365,479, Cl. 62-55.000.
Wilmers, Gerhard, 4,366,557, Cl. 365-189.000.
Zeller, Karl S.; and Thormann, Heinz, 4,365,903, Cl. 400-490.000.

Sierralta, Luis F.: *See*—
Ferer, Harvey D.; and Sierralta, Luis F., 4,366,006, Cl. 134-38.000.

SIG-Schweizerische Industrie-Gesellschaft: *See*—
Egli, Alwin, 4,365,715, Cl. 206-524.800.
Grundler, Bruno, 4,365,459, Cl. 53-552.000.

Sigri Elektrographit GmbH: *See*—
Gistinger, Guido; and Schmid, Manfred, 4,366,191, Cl. 427-228.000.

Sikes, Edward C.: *See*—
Brigman, Maurice C.; and Sikes, Edward C., 4,365,924, Cl. 414-549.000.

Silano, Michael A.; and Featherston, Robert D., to National Starch and Chemical Corporation. Water-resistant alkaline corrugating adhesive composition. 4,366,275, Cl. 524-47.000.

Silchor: *See*—
Houle, Raymond T.; Redwine, Michael A.; Kilbourn, Fredrick A.; Reed, Stewart D.; Sills, Arthur A.; and Kraft, John H., 4,365,367, Cl. 4-555.000.

Sills, Arthur A.: *See*—
Houle, Raymond T.; Redwine, Michael A.; Kilbourn, Fredrick A.; Reed, Stewart D.; Sills, Arthur A.; and Kraft, John H., 4,365,367, Cl. 4-555.000.

Silverberg, Morton, to Xerox Corporation. Document handling unit. 4,365,889, Cl. 355-14.0SH.

Simcoe, Kent W.: *See*—
Spangler, Richard M.; Burmeister, Eugene V.; Cada, Frank E.; Covington, Wayne F.; Christopher, Chris J.; Judd, Myles A.; Wenninger, Freddie W.; Watson, Robert E.; and Simcoe, Kent W., 4,366,553, Cl. 364-900.000.

Simmons, Harold C.: *See*—
Harding, Curtis F.; and Simmons, Harold C., 4,365,753, Cl. 239-404.000.

Simons, Brent S., to Itek Corporation. Laser light detection system. 4,366,378, Cl. 250-214.0AG.

Simpson, Frank F.; Johnson, John W.; and Oatham, Robert J., to Black & Decker Inc. Brush assembly and mounting arrangement for a portable tool. 4,366,403, Cl. 310-239.000.

Singer Company, The: *See*—
Adams, Kenneth D., 4,365,569, Cl. 112-315.000.
Kuhar, Ludwig J., 4,365,567, Cl. 112-184.000.
Laidig, Manfred R., 4,365,566, Cl. 112-158.00F.
Obermann, George, 4,366,352, Cl. 200-35.00R.
Reed, John T.; and Stubbart, John C., 4,365,960, Cl. 434-38.000.
Ross, Roger J., 4,365,568, Cl. 112-291.000.

Singh, Baldev: *See*—
Lesher, George Y.; and Singh, Baldev, 4,366,319, Cl. 546-270.000.

Singh, Hakam; Hutt, Jack W.; and Williams, Morris E., to Products Research & Chemical Corp. Liquid polythioethers. 4,366,307, Cl. 528-373.000.

Singh, Harmahendar, to General Motors Corporation. Battery support structure. 4,365,681, Cl. 180-68.500.

Sippekamp, Oskar: *See*—
Lange, Gerhard; Sippekamp, Oskar; and Schwenda, Gerhard, 4,366,412, Cl. 313-325.000.

Siri, Bruno G. Process and apparatus for continuously applying reinforcing tapes from synthetic resin, on the longitudinal sides of plastic sheets. 4,366,017, Cl. 156-244.110.

Sirois, Walter J.: *See*—
Barnes, George A.; and Sirois, Walter J., 4,365,803, Cl. 273-5.00R.

Sirtl, Erhard: *See*—
Ast, Gerhard; Dietl, Josef; Helmreich, Dieter; Miller, Hans-Dieter; and Sirtl, Erhard, 4,366,024, Cl. 156-607.000.

Skatsche, Othmar: *See*—
Obermayer, Bertram; Skatsche, Othmar; and Greier, Josef, 4,365,594, Cl. 123-41.82R.

SKF Compagnie d'Applications Mecaniques: *See*—
Perrichot, Daniel; and Faurie, Maurice, 4,365,850, Cl. 308-26.000.

SKF Engineering and Research Centre, B.V.: *See*—
van Nederveen, Hans B.; and Verburgh, Martin B., 4,365,679, Cl. 175-371.000.

SKF Kuggellagerfabriken GmbH: *See*—
Fingerle, Rudolf, 4,365,852, Cl. 308-201.000.

Skinner, Robert T. J., to Lucas Industries Limited. Fuel injection pumping apparatus. 4,365,939, Cl. 417-221.000.

Slabach, John C., Jr., to PPG Industries, Inc. Method of press bending a painted glass sheet. 4,365,985, Cl. 65-106.000.

Slater Electric Inc.: *See*—
Slater, Thomas S.; and Bowden, Wade R., Jr., 4,366,343, Cl. 174-65.00R.

Slater Steel Industries Limited: *See*—
Houston, Herbert J.; and Dinsmore, Edward S., 4,365,410, Cl. 29-762.000.

Slater, Thomas S.; and Bowden, Wade R., Jr., to Slater Electric Inc. Cable clamp means and cable entry port closure means for electrical outlet boxes and the like. 4,366,343, Cl. 174-65.00R.

Sluys, Wesley W., to Builders Concrete, Inc. Transverse post-tensioned tendon interconnecting system for marine floats. 4,365,914, Cl. 405-221.000.

Smith, Bob G.: *See*—
Christiansen, David W.; and Smith, Bob G., 4,366,116, Cl. 376-446.000.

Smith, Frank J.: *See*—
Werner, Raymond J.; Jennings, William J.; Crowley, Daniel L.; and Smith, Frank J., 4,366,292, Cl. 525-240.000.

Smith, Harry A., to Dow Chemical Company, The. Melt polymerization of ε-caprolactam. 4,366,306, Cl. 528-315.000.

Smith, Kenneth P.: *See*—
Goodman, Lawrence A.; and Smith, Kenneth P., 4,366,495, Cl. 357-23.000.

Smith, Lowell S.; and Brisken, Axel F., to General Electric Company. Ultrasonic transducer for single frequency applications. 4,366,406, Cl. 310-334.000.

Smith, Wayne G.: *See*—
Lee, Ernest O.; Smith, Wayne G.; and Hanson, George C., 4,366,350, Cl. 179-175.20C.

SmithKline Instruments, Inc.: *See*—
Lawrence, Paul J.; and Townsley, Charles W., 4,365,970, Cl. 436-66.000.

Snyder, H. Kent, Jr., to Chicago Display Company. Portable sign. 4,365,435, Cl. 40-608.000.

Societa' Pneumatici Pirelli S.p.A.: *See*—
Salvadori, Bruno, 4,365,945, Cl. 425-43.000.

S.A. Armstrong Limited: *See*—
Turlej, Zbigniew W., 4,366,426, Cl. 318-786.000.

Societe Anonyme D.B.A.: *See*—
Carre, Jean J.; and Riquart, Christian, 4,365,844, Cl. 303-6.00C.

Societe Anonyme dite: L'Oreal: *See*—
Gaetani, Quintino; and Papantoniou, Christos, 4,366,099, Cl. 260-407.000.

Societe Anonyme Francaise du Ferodo: *See*—
Thirion de Briel, Jacques J. M., 4,365,963, Cl. 474-13.000.

Societe Chimique des Charbonnages-CdF Chimie: *See*—
Bujadoux, Karel; Neyer, Jean-Marie; and Houzeaux, Jean-Pierre, 4,366,140, Cl. 423-498.000.

Societe D'Assistance Technique Pour Produits Nestle S.A.: *See*—
Wetzel, Pierre, 4,366,176, Cl. 426-104.000.
Societe de Vente et de Fabrication pour le Decolletage LNS S.A.: *See*—
Neukomm, Walter, deceased, 4,365,529, Cl. 82-38.00A.
Societe Europeene de Propulsion: *See*—
Ghommidh, Josette; Buttazzoni, Bernard; Constant, Georges; Diloy, Etienne; and Morancho, Roland, 4,366,183, Cl. 427-2.000.
Societe Nationale des Poudres et Explosifs: *See*—
Le Roy, Patrice M.; and Pattein, Jacky P., 4,366,301, Cl. 528-66.000.
Lippler, Remy R.; Mengelle, Andre J.; and Plazanet, Jacques, 4,365,558, Cl. 102-431.000.
Societe Nationale Industrielle Aerospatiale: *See*—
Martin, Henri, 4,365,847, Cl. 303-93.000.
Sofi, Giorgio: *See*—
Cedolin, Riccardo; Chiarottino, Wolmer; Giandonato, Giuseppe; Giorcelli, Silvano; Martinengo, Giorgio; Sofi, Giorgio; and Villone, Sergio, 4,366,535, Cl. 364-200.000.
Softly, Peter, to Invisible Optics Inc. Light masking device. 4,365,866, Cl. 350-276.00R.
Sol, Nicole: *See*—
de Cremoux, Baudouin; Poulain, Pierre; and Sol, Nicole, 4,366,334, Cl. 136-255.000.
Soma, Eichi; Kobayashi, Kohei; Karakawa, Takuro; Kato, Shigeyoshi; and Uchida, Kiichi, to Sapporo Breweries Limited; Ito, Etsuo; and Daicel Chemical Industries, Ltd. Process for the production of polysaccharide RBS substance. 4,366,308, Cl. 536-128.000.
Sone, Kohki, to Nissan Motor Co., Ltd. System for feedback control of air/fuel ratio in IC engine with means to control current supply to oxygen sensor. 4,365,604, Cl. 123-440.000.
Sony Corporation: *See*—
Takano, Masayuki; Hosoi, Sadao; and Matsushita, Yuichi, 4,366,515, Cl. 360-77.000.
Watanabe, Yuji; and Hayashi, Hiroyuki, 4,366,510, Cl. 360-10.200.
South African Inventions Development Corp.: *See*—
Coetzer, Johan; and Thackeray, Michael M., 4,366,215, Cl. 429-199.000.
Sovia, Frederick C.: *See*—
Castro, German O.; and Sovia, Frederick C., 4,365,404, Cl. 29-455.00R.
Spangler, Richard M.; Burmeister, Eugene V.; Cada, Frank E.; Covington, Wayne F.; Christopher, Chris J.; Judd, Myles A.; Wenninger, Freddie W.; Watson, Robert E.; and Simcoe, Kent W., to Hewlett-Packard Company. Electronic computing apparatus employing basic language. 4,366,553, Cl. 364-900.000.
Specht, Donald P.; Houle, Conrad G.; and Farid, Samir Y., to Eastman Kodak Company. Photopolymerizable compositions featuring novel co-initiators. 4,366,228, Cl. 430-281.000.
Speer, Harold A. Automatic door control system. 4,365,442, Cl. 49-346.000.
Sperry Corporation: *See*—
Kregness, Glen R.; and Criswell, Peter B., 4,366,548, Cl. 364-748.000.
Taylor, Henry D.; and Breeden, Robert H., 4,365,647, Cl. 137-489.000.
Sphere Investments Limited: *See*—
Stone, Alan M., 4,365,717, Cl. 209-539.000.
Spivey, William J., Jr.: *See*—
Schexnayder, Lawrence F.; and Spivey, William J., Jr., 4,365,473, Cl. 60-447.000.
Springer, John R., to Nu-Co Industries Inc. Carpet and fabric cleaning machine. 4,365,378, Cl. 15-98.000.
Standard Oil Company (Indiana): *See*—
Bright, Gary R., 4,365,668, Cl. 166-214.000.
Nimry, Tayseer S.; and Fields, Ellis K., 4,366,304, Cl. 528-189.000.
Stark, W. Max: *See*—
Hamill, Robert L.; and Stark, W. Max, 4,366,147, Cl. 424-117.000.
Stauffer Chemical Company: *See*—
Gaughan, Edmund J., 4,365,990, Cl. 71-100.000.
Staveley Chemicals Limited: *See*—
Wheatcroft, John B.; and Wall, Edward N., 4,366,234, Cl. 430-485.000.
Stax Industries Limited: *See*—
Noro, Masao, 4,366,432, Cl. 323-224.000.
Stechow, Jochen: *See*—
Feller, Otto; Oepen, Heinz; and Stechow, Jochen, 4,366,543, Cl. 364-474.000.
Steelcraft Corporation: *See*—
Ford, R. Gary, 4,365,910, Cl. 403-172.000.
Stemme, Otto: *See*—
Fischer, Gunter; Stemme, Otto; and Wagensonner, Eduard, 4,366,381, Cl. 250-316.100.
Stenvall, Carl-Johan. Log alignment apparatus. 4,365,704, Cl. 198-395.000.
Stephan, Gerard, to Nadella. Coupling clamp and a method of manufacture therefor. 4,365,909, Cl. 403-157.000.
Stephens, William S., III. Electric heater-blower apparatus for removing frost and snow from vehicle windows. 4,366,368, Cl. 219-367.000.
Sterling Drug Inc.: *See*—
Corey, Garland G., 4,365,362, Cl. 4-228.000.
Lesher, George Y.; and Singh, Baldev, 4,366,319, Cl. 546-270.000.
Sterlingworth Music, Inc.: *See*—
Rendell, Stanley E., 4,365,534, Cl. 84-297.00S.
Steude, Klaus: *See*—
Frohnert, Heinz; and Steude, Klaus, 4,365,976, Cl. 55-4.000.
Stevens, S. Marie. Woven cloth basket. 4,365,658, Cl. 150-48.000.
Stevenson, William H., IV. Working sails and methods for furling them while aloft. 4,365,572, Cl. 114-104.000.
Stiebel Eltron GmbH & Co. KG: *See*—
Reusch, Heinz; and Kreikenbohm, Robert, 4,365,662, Cl. 165-10.000.
Stiles, Kenneth M., to Sea-Log Corporation. Hybrid cable construction. 4,365,865, Cl. 350-96.230.
Stiller, Armin; and Knoke, Manfred, to Volkswagenwerk Aktiengesellschaft. Timing signal generator for ignition and fuel injection systems in a 4-stroke internal combustion engine. 4,365,602, Cl. 123-414.000.
Stoeckigt, Dieter: *See*—
Vodrazka, Wolfgang; Klahr, Erhard; Oppenlaender, Knut; Trieselt, Wolfgang; Stoeckigt, Dieter; and Neumann, Werner, 4,366,326, Cl. 568-613.000.
Stohler, Harro: *See*—
Hofheinz, Werner; and Stohler, Harro, 4,366,166, Cl. 424-273.00R.
Stone, Alan M., to Sphere Investments Limited. Feed apparatus and method. 4,365,717, Cl. 209-539.000.
Stoopak, Samuel B.; Kornblum, Saul S.; and Jacobs, Allen L., to Sandoz, Inc. Soft gelatin capsule with a liquid ergot alkaloid center fill solution and method of preparation. 4,366,145, Cl. 424-37.000.
Stori, Heinrich; and Averdiek, Walter, to Sulzer Brothers Limited; and Klockner-Werke AG. Support for a spherical tank. 4,365,478, Cl. 62-45.000.
Stork Brabant B.V.: *See*—
Anselrode, Lodewijk, 4,366,542, Cl. 364-469.000.
Strassle, Alex, to Intercollection Development SA. Chair construction with protective cushioning for exposed structural projections. 4,365,839, Cl. 297-411.000.
Streker, Lajos: *See*—
Czegledi, Bela; Csovari, Mihaly; Erdelyi, Miklos; Streker, Lajos; Toth, Istvan; Szabo nee Mogyorosi, Katalin; Riederauer, Szilard; and Szentgyorgyi, Geza, 4,366,129, Cl. 423-112.000.
Stromberg-Carlson Corporation: *See*—
Lee, Ernest O.; Smith, Wayne G.; and Hanson, George C., 4,366,350, Cl. 179-175.20C.
Stuart, Patrick: *See*—
Langer, Manfred; Burfeindt, Heinz; and Stuart, Patrick, 4,365,933, Cl. 415-217.000.
Stubbart, John C.: *See*—
Reed, John T.; and Stubbart, John C., 4,365,960, Cl. 434-38.000.
Stultz, William H.: *See*—
Trickel, Lorn L.; and Stultz, William H., 4,365,743, Cl. 238-8.000.
Stumm, James E. Method of manufacturing high stability joint. 4,365,736, Cl. 228-121.000.
Suda, Seiji: *See*—
Mouri, Yasunori; Suda, Seiji; Shida, Masami; and Furuhashi, Toshio, 4,366,541, Cl. 364-431.050.
Suematsu, Koichi: *See*—
Shinagawa, Yukio; Ohtani, Sumio; Suematsu, Koichi; and Kawaguchi, Hideo, 4,366,239, Cl. 430-533.000.
Suga, Masaaki; and Hamada, Hideo, to Nissan Motor Co., Ltd. Apparatus for controlling line pressure of automatic transmission. 4,365,526, Cl. 74-866.000.
Suganuma, Hisashi, to Pioneer Electronic Corporation. Automatic gain control circuit. 4,366,450, Cl. 330-285.000.
Sugasawa, Fukashi, to Nissan Motor Company, Limited. Internal combustion engine. 4,365,598, Cl. 123-198.00F.
Sugasawa, Fukashi: *See*—
Iizuka, Haruhiko; and Sugasawa, Fukashi, 4,365,597, Cl. 123-198.00F.
Sugino, Takashi: *See*—
Shimizu, Hirokazu; Itoh, Kunio; Sugino, Takashi; and Wada, Masaru, 4,366,568, Cl. 372-45.000.
Sugiura, Yasushi: *See*—
Toyama, Kouichi; Sugiura, Yasushi; and Adachi, Michio, 4,365,609, Cl. 123-635.000.
Sugiyama, Jin, to Unitech Engineering Ltd. Driving apparatus for retaining frame of object to be sewed in automatic sewing machine. 4,365,564, Cl. 112-121.120.
Sugiyama, Masatoshi; Odawara, Hideo; and Takeda, Nagao, to Fuji Photo Film Co., Ltd. Aqueous inks for ink jet printing. 4,365,998, Cl. 106-22.000.
Sugiyama, Matsuyoshi; Morishita, Teru; and Suzuki, Toshikazu, to Toyota Jidosha Kogyo Kabushiki Kaisha. Rotary type electrostatic spray painting device. 4,365,760, Cl. 239-703.000.
Sugiyama, Matsuyoshi: *See*—
Morishita, Teru; Sugiyama, Matsuyoshi; and Suzuki, Toshikazu, 4,365,759, Cl. 239-703.000.
Sugiyama, Yoshinobu, to Pioneer Electronic Corporation. Push-pull amplifier circuit. 4,366,447, Cl. 330-267.000.
Sullivan, Edith. Retroreflective strip with pocket. 4,365,354, Cl. 2-247.000.
Sulzer Brothers Limited: *See*—
Koch, Bernhard R.; and Vogelbacher, Erich, 4,365,652, Cl. 139-50.000.
Stori, Heinrich; and Averdiek, Walter, 4,365,478, Cl. 62-45.000.
Sumitomo Chemical Company, Limited: *See*—
Ono, Keiichi; Kawakami, Hajime; and Katsube, Junki, 4,366,157, Cl. 424-256.000.
Yamada, Yoshimi; Ooishi, Tadashi; Kato, Toshiro; and Mukai, Kunio, 4,366,150, Cl. 424-199.000.
Sumitomo Electric Industries: *See*—
Miyamoto, Yoshimi; Kojima, Keiichi; and Toriumi, Yasuo, 4,366,464, Cl. 338-214.000.

Sumitomo Precision Products Company, Ltd.: *See*—
Nakamura, Masakazu, 4,365,665, Cl. 165-80.00B.
Sun Tech, Inc.: *See*—
White, David C., 4,366,169, Cl. 424-285.000.
Sunbeam Plastics Corporation: *See*—
Montgomery, Gary V., 4,365,721, Cl. 215-217.000.
Suncor Inc.: *See*—
Morgan, George W., 4,365,571, Cl. 114-42.000.
Sung, Rodney L.; Sweeney, William M.; and Kaufman, Benjamin J., to Texaco Inc. Fuel composition. 4,365,972, Cl. 44-53.000.
Suomen Sokeri Osakeyhtio: *See*—
Marvia, Kaarlo, 4,365,737, Cl. 229-17.00R.
Suzukawa, Yuichi; Kobayashi, Waichi; and Ohtaka, Satoshi, to Ube Industries, Ltd. Process for producing a calcia clinker. 4,366,257, Cl. 501-123.000.
Suzuki, Kinzo: *See*—
Ogura, Masato; Horio, Noriyasu; and Suzuki, Kinzo, 4,365,930, Cl. 415-61.000.
Suzuki, Kunio; and Takahashi, Minoru, to Hitachi, Ltd. Hair dryer. 4,365,426, Cl. 34-101.000.
Suzuki, Osamu: *See*—
Oishi, Kengo; and Suzuki, Osamu, 4,365,712, Cl. 206-387.000.
Suzuki, Takahiko: *See*—
Kageyama, Hidehei; and Suzuki, Takahiko, 4,365,390, Cl. 24-11.00R.
Suzuki, Toshikazu: *See*—
Morishita, Teru; Sugiyama, Matsuyoshi; and Suzuki, Toshikazu, 4,365,759, Cl. 239-703.000.
Sugiyama, Matsuyoshi; Morishita, Teru; and Suzuki, Toshikazu, 4,365,760, Cl. 239-703.000.
Suzuki, Yasuo: *See*—
Munekata, Kenichi; Suzuki, Yasuo; and Ohta, Norio, 4,365,446, Cl. 51-268.000.
Suzuki, Yoshihisa: *See*—
Mori, Mitsuo; and Suzuki, Yoshihisa, 4,365,388, Cl. 19-159.00A.
Sverdrup, Edward F.: *See*—
Ricks, Herbert E.; and Sverdrup, Edward F., 4,366,034, Cl. 204-32.00R.
Svoboda, Glenn R., to Freeman Chemical Corporation. Method for making coated molded articles. 4,366,109, Cl. 264-255.000.
Swanson, Elmer G., to Champion International Corporation. Unitized pallets. 4,365,710, Cl. 206-386.000.
Swanson, Rollan. Process for conversion of coal to hydrocarbon and other values. 4,366,044, Cl. 208-10.000.
Swanson, Rollan. Process for conversion of coal to gaseous hydrocarbons. 4,366,045, Cl. 208-10.000.
Sweeney, William M.: *See*—
Sung, Rodney L.; Sweeney, William M.; and Kaufman, Benjamin J., 4,365,972, Cl. 44-53.000.
Sysoev, Vyacheslav N.: *See*—
Kurovich, Arkady N.; Krasnokutsky, Jury B.; Sysoev, Vyacheslav N.; Golman, Lev D.; Zuev, Vladimir T.; Nesterov, Viktor I.; and Laboda, Viktor A., 4,365,494, Cl. 72-63.000.
Systron-Donner Corporation: *See*—
Woodruff, James R., 4,365,512, Cl. 73-503.000.
Syva Company: *See*—
Tom, Henry K.; and Rowley, Gerald L., 4,366,241, Cl. 435-7.000.
Szabo nee Mogyorosi, Katalin: *See*—
Czegledi, Bela; Csovari, Mihaly; Erdelyi, Miklos; Streker, Lajos; Toth, Istvan; Szabo nee Mogyorosi, Katalin; Riederauer, Szilard; and Szentgyorgyi, Geza, 4,366,129, Cl. 423-112.000.
Szabo, Sandor; and Usadel, Klaus H., to Brigham and Women's Hospital. Use of somatostatin in the prevention and cure of vascular, membrane, or organ lesions. 4,366,148, Cl. 424-177.000.
Szentgyorgyi, Geza: *See*—
Czegledi, Bela; Csovari, Mihaly; Erdelyi, Miklos; Streker, Lajos; Toth, Istvan; Szabo nee Mogyorosi, Katalin; Riederauer, Szilard; and Szentgyorgyi, Geza, 4,366,129, Cl. 423-112.000.
Tachibana, Akira; Endo, Akira; and Sekine, Kenji, to Hitachi, Ltd.; and Nissan Motor Co., Ltd. Signal processcr for skid control device. 4,366,546, Cl. 364-571.000.
Tacke, Peter: *See*—
Freitag, Dieter; Nouvertne, Werner; Reinking, Klaus; Tacke, Peter; Kleiner, Frank; and Schmidt, Manfred, 4,366,276, Cl. 524-94.000.
Taisho Pharmaceutical Co., Ltd.: *See*—
Mizutani, Taku; Yamagishi, Michio; Mizoue, Kazutoshi; Kawashima, Akira; Omura, Sadafumi; Otake, Noboru; and Seto, Haruo, 4,366,311, Cl. 536-123.000.
Takada, Juichiro. Drive wire for passive restraint systems. 4,365,827, Cl. 280-804.000.
Takada, Yuji: *See*—
Inoue, Hiromitsu; Ohashi, Hiroshi; and Takada, Yuji, 4,366,473, Cl. 340-562.000.
Takahashi, Minoru: *See*—
Suzuki, Kunio; and Takahashi, Minoru, 4,365,426, Cl. 34-101.000.
Takahashi, Nagashige; and Harada, Shinichi, to Kabushiki Kaisha Medos Kenkyusho. Optical source unit for an endoscope. 4,366,529, Cl. 362-4.000.
Takahashi, Osamu, to Fuji Photo Film Co., Ltd. Photographic materials. 4,366,236, Cl. 430-505.000.
Takahashi, Osamu: *See*—
Hamaoka, Tsutomu; Takahashi, Osamu; Harada, Tooru; Sakai, Minoru; and Ohki, Nobutaka, 4,366,226, Cl. 430-214.000.
Takahashi, Susumu: *See*—
Fukuzawa, Tadashi; Nakamura, Michiharu; and Takahashi, Susumu, 4,366,567, Cl. 372-38.000.
Takahashi, Yuji. Ironless rotor winding for electric motor, method and machine for making the same. 4,365,656, Cl. 140-92.100.
Takaku, Sakae: *See*—
Mori, Takashi; Takaku, Sakae; Matsuura, Fumiaki; Murakami, Yasushi; Noda, Yukifumi; Yamazaki, Tamotsu; Neichi, Tomohiro; Nakakimura, Hiroshi; Kataoka, Shigeyuki; Matsuno, Takashi; Hata, Shun-ichi; and Takanashi, Shigeru, 4,366,161, Cl. 424-266.000.
Takamura, Tohru: *See*—
Terakawa, Sumio; Takamura, Tohru; Horii, Kenju; and Yamada, Takahiro, 4,366,503, Cl. 358-213.000.
Takanashi, Akira; and Ishigami, Yasuhiko, to Hitachi, Ltd.; and Hitachi Microcomputer Engineering Ltd. Converter. 4,366,470, Cl. 340-347.0DA.
Takanashi, Shigeru: *See*—
Mori, Takashi; Takaku, Sakae; Matsuura, Fumiaki; Murakami, Yasushi; Noda, Yukifumi; Yamazaki, Tamotsu; Neichi, Tomohiro; Nakakimura, Hiroshi; Kataoka, Shigeyuki; Matsuno, Takashi; Hata, Shun-ichi; and Takanashi, Shigeru, 4,366,161, Cl. 424-266.000.
Takano, Masayuki; Hosoi, Sadao; and Matsushita, Yuichi, to Sony Corporation. Automatic head height control apparatus. 4,366,515, Cl. 360-77.000.
Takaoka, Yukio; Haraguchi, Keisuke; and Yamaka, Shiyouichi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Focusing screen holding device. 4,365,883, Cl. 354-152.000.
Takasugi, Hisashi: *See*—
Takaya, Takao; Masugi, Takashi; Takasugi, Hisashi; and Kochi, Hiromu, 4,366,153, Cl. 424-246.000.
Takats, Ferenc; Lorand, Ferenc; Pajer, Imre; and Liptak, Laszlo, to Eroterv Eromu es Halozattervezo Vallalat. Process and equipment for the transportation and storage of radioactive and/or other dangerous materials. 4,366,095, Cl. 252-633.000.
Takatsuki, Toshiharu; Fujiwara, Ken-ichi; Nomura, Jutaro; and Okamura, Shigeru, to Mitsubishi Denki Kabushiki Kaisha; and Nippon Telegraph and Telephone Public Corp. Apparatus for selecting terminal equipment in telephone lines. 4,366,347, Cl. 179-2.0DP.
Takatsuki, Toshiharu; Fujiwara, Ken-ichi; Yanagisawa, Sinobu; and Okamura, Shigeru, to Mitsubishi Denki Kabushiki Kaisha; and Nippon Telegraph & Telephone Public Corporaton. Data transmission system. 4,366,572, Cl. 375-37.000.
Takaya, Takao; Masugi, Takashi; Takasugi, Hisashi; and Kochi, Hiromu, to Fujisawa Pharmaceutical Co., Ltd. Cephem compounds. 4,366,153, Cl. 424-246.000.
Takeda, Mutsuhiko: *See*—
Amemiya, Akira; Kunii, Tadashi; Furusawa, Tomotaka; Takeda, Mutsuhiko; Tanaka, Katsumasa; Umemura, Toshikazu; Ono, Yoshihiro; Masumoto, Isamu; Nakao, Noriyasu; and Furukawa, Masanori, 4,366,305, Cl. 528-230.000.
Takeda, Nagao: *See*—
Sugiyama, Masatoshi; Odawara, Hideo; and Takeda, Nagao, 4,365,998, Cl. 106-22.000.
Takeda, Sumiyoshi: *See*—
Hatada, Toshio; Senshu, Takao; Arai, Akira; Harada, Fumio; Matsuzaki, Atsushi; Futawatari, Hajime; Imaizumi, Yutaka; and Takeda, Sumiyoshi, 4,365,667, Cl. 165-152.000.
Takeda, Yutaka: *See*—
Hirao, Motohisa; Nakamura, Michiharu; Doi, Atsutoshi; Tsuji, Shinji; Takeda, Yutaka; and Mori, Takao, 4,366,569, Cl. 372-46.000.
Takenaka, Shigeo; and Kamohara, Eiji, to Tokyo Shibaura Denki Kabushiki Kaisha. Picture tube with an electron gun having an improved potential supplying means. 4,366,415, Cl. 313-457.000.
Takeuchi, Jun; Yamazumi, Kaishu; and Ishihara, Takao, to Kabushiki Kaisha Fujikoshi. Method for hardening steel. 4,366,008, Cl. 148-143.000.
Takeuchi, Masaki, to Tokyo Shibaura Denki Kabushiki Kaisha. Discrete type automated chemical analytic apparatus. 4,366,119, Cl. 422-65.000.
Takeyama, Tetsu; Azuma, Kenkoku; Ikeda, Akira; Yamamoto, Toshie; and Katsurada, Shigeho, to Mitsubishi Denki Kabushiki Kaisha. Water producing apparatus. 4,365,979, Cl. 55-181.000.
Takimoto, Hiroyuki: *See*—
Hirata, Noritsugu; and Takimoto, Hiroyuki, 4,365,875, Cl. 352-25.000.
Tamminen, Pentti J. Battery and contact combination. 4,366,213, Cl. 429-110.000.
Tanabe, Toshio: *See*—
Oda, Takeshi; Tanabe, Toshio; and Tanaka, Yoshimasa, 4,365,376, Cl. 15-22.00R.
Tanaka, Atsuo; Okamura, Takaaki; Kanda, Katsumi; and Kondo, Yoshikazu, to Toyo Kohan Co., Ltd. Metal-resin composite and process for its production. 4,366,185, Cl. 427-386.000.
Tanaka, Hideo: *See*—
Ishido, Yoshinobu; and Tanaka, Hideo, 4,366,284, Cl. 524-447.000.
Tanaka, Katsumasa: *See*—
Amemiya, Akira; Kunii, Tadashi; Furusawa, Tomotaka; Takeda, Mutsuhiko; Tanaka, Katsumasa; Umemura, Toshikazu; Ono, Yoshihiro; Masumoto, Isamu; Nakao, Noriyasu; and Furukawa, Masanori, 4,366,305, Cl. 528-230.000.
Tanaka, Koji, to Japan Exlan Co., Ltd. Novel water-swellable fibers having a high degree of water-swellability and excellent physical

properties and process for producing the same. 4,366,206, Cl. 428-373.000.
Tanaka, Kunir: *See—*
Kishi, Hajimu; and Tanaka, Kunio, 4,366,475, Cl. 340-731.000.
Tanaka, Yoshimasa: *See—*
Oda, Takeshi; Tanabe, Toshio; and Tanaka, Yoshimasa, 4,365,376, Cl. 15-22.00R.
Tanaka, Yoshiyuki: *See—*
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Tanaka, Yutaka: *See—*
Yatomi, Takeshi; Tanaka, Yutaka; and Ozaki, Yoshio, 4,366,359, Cl. 219-69.00M.
Tanasawa, Yasusi; Muto, Norio; Saito, Akinori; and Kawamura, Kiyomi, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Swirl injection valve. 4,365,746, Cl. 239-125.000.
Tandler, Peter: *See—*
Schopper, Bernd; Tandler, Peter; Hartmann, Herbert; and Reuter, Manfred, 4,365,846, Cl. 303-56.000.
Tasaki, Takaharu: *See—*
Saito, Tadao; and Tasaki, Takaharu, 4,365,751, Cl. 239-333.000.
Tatabanyal Szenbanyak: *See—*
Czegledi, Bela; Csovari, Mihaly; Erdelyi, Miklos; Streker, Lajos; Toth, Istvan; Szabo nee Mogyorosi, Katalin; Riederauer, Szilard; and Szentgyorgyi, Geza, 4,366,129, Cl. 423-112.000.
Tatsumi, Akira: *See—*
Watanabe, Kenichi; Kinoshita, Hiroshi; Tatsumi, Akira; and Goto, Koichi, 4,365,542, Cl. 98-40.00V.
Tawfik, Randa, to Gould Inc. Cycling resistant fusible element for electric fuses. 4,366,461, Cl. 337-159.000.
Taylor, Henry D.; and Breeden, Robert H., to Sperry Corporation. Power transmission. 4,365,647, Cl. 137-489.000.
TDK Electronic Co., Ltd.: *See—*
Shoji, Shigemasa, 4,365,769, Cl. 242-199.000.
Technicare Corporation: *See—*
Hill, Edwin R., 4,366,574, Cl. 378-99.000.
Teijin Limited: *See—*
Horiuchi, Takumi; Kuroda, Yoji; and Hukatsu, Kenji, 4,365,466, Cl. 57-205.000.
Tejima, Akio: *See—*
Ohta, Ichiro; Tejima, Akio; Watando, Masayuki; Yamaoka, Akira; Ishiwata, Kouzi; and Yamada, Minoru, 4,366,362, Cl. 219-123.000.
Telectronics Pty. Ltd.: *See—*
Loughman, James; Daly, Christopher N.; and Washington, Ronald A. C., 4,365,633, Cl. 128-419.0PG.
Teletype Corporation: *See—*
Jung, Werner, 4,365,905, Cl. 400-616.200.
Telford, Thomas M., to Warn Industries, Inc. One-piece locking clutch. 4,365,696, Cl. 192-67.00R.
Tellier, Pierre; Demaille, Jean-Pierre; and Doillon, Jean, to Compagnie du Roneo. Computer terminal station for data input and output. 4,365,561, Cl. 108-7.000.
Temkin, Henryk: *See—*
Keramidas, Vassilis G.; McCoy, Robert J.; and Temkin, Henryk, 4,366,186, Cl. 427-89.000.
Temple, Davis L., Jr., to Mead Johnson & Company. Antiallergic methods using diazabeterocyclopurines. 4,366,156, Cl. 424-251.000.
Terakawa, Sumio; Takamura, Tohru; Horii, Kenju; and Yamada, Takahiro, to Matsushita Electronics Corp.; and Matsushita Electric Industrial Co., Ltd. Solid state image pick-up device and its charge transfer method. 4,366,503, Cl. 358-213.000.
Terakura, Yukio: *See—*
Numazawa, Akio; Katayama, Nobuaki; Ikemoto, Kazuhito; Sasaki, Kan; and Terakura, Yukio, 4,365,523, Cl. 74-606.00R.
Tercic, Eduard: *See—*
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Terraillon, Marc: *See—*
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Terraillon, Terson: *See—*
Mazzucco, Daniel, 4,366,367, Cl. 219-272.000.
Terui, Hiroshi; and Kobayashi, Morio, to Nippon Telegraph & Telephone Public Corporation. Optical switch. 4,365,862, Cl. 350-96.130.
Teshima, Hiroshi: *See—*
Shima, Ichiji; Teshima, Hiroshi; Koizumi, Takayuki; and Inoue, Satoru, 4,366,544, Cl. 364-550.000.
Texaco Development Corporation: *See—*
Burns, Robert B., 4,365,912, Cl. 405-60.000.
Texaco, Inc.: *See—*
Knifton, John F.; and Lin, Jiang-Jen, 4,366,259, Cl. 518-700.000.
Sung, Rodney L.; Sweeney, William M.; and Kaufman, Benjamin J., 4,365,972, Cl. 44-53.000.
Texas Instruments Incorporated: *See—*
Tokuda, Ryuji; and Andresen, Bernhard H., 4,365,878, Cl. 354-25.000.
Textron, Inc.: *See—*
Halwes, Dennis R., 4,365,771, Cl. 244-17.270.
Thackeray, Michael M.: *See—*
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Thalmann, Dieter: *See—*
Schellenberg, Hans; Schenkel, Eduard; Schwander, Andreas; and Thalmann, Dieter, 4,365,468, Cl. 57-291.000.
Theilen, Rolf: *See—*
Gottsmann, Helmut; and Theilen, Rolf, 4,365,900, Cl. 400-57.000.
Theodor Hymmen KG, Firma: *See—*
Pankoke, Werner, 4,365,548, Cl. 100-154.000.
Theriault, Gerald E., to RCA Corporation. I.F. Response control system for a television receiver. 4,366,498, Cl. 358-38.000.
Theurer, Josef, to Franz Plasser Bahnbaumischenen Industriellgesellschaft m.b.H. Mobile rail contouring machine. 4,365,918, Cl. 409-296.000.
Thiault, Roger P.: *See—*
Orain, Michel A.; and Thiault, Roger P., 4,365,791, Cl. 267-166.000.
Thiboutot, Robert, to Les Entreprises Rotot Ltee. Folding joint for interconnecting elongate members. 4,365,908, Cl. 403-102.000.
Thiele, Paul: *See—*
Bode, Udo; Thiele, Paul; Mohring, Gunter; and Hildebrand, Helmut, 4,366,457, Cl. 333-237.000.
Thirion de Briel, Jacques J. M., to Societe Anonyme Francaise du Ferodo. Speed change pulley. 4,365,963, Cl. 474-13.000.
Thomas & Betts Corporation: *See—*
Sadigh-Behzadi, Amir-Akbar, 4,365,860, Cl. 339-97.00P.
Thomas, Lowell S.; and Petrella, Ronald V., to Dow Chemical Company, The. Polycarbonate containing a metal salt of a perhalometalate as an ignition depressant. 4,366,283, Cl. 524-413.000.
Thomson-CSF: *See—*
Berger, Jean L., 4,366,455, Cl. 333-165.000.
Caurant, Robert; and Leduc, Alain, 4,365,959, Cl. 434-24.000.
de Cremoux, Baudouin; Poulain, Pierre; and Sol, Nicole, 4,366,334, Cl. 136-255.000.
Hareng, Michel; and Le Berre, Serge, 4,365,869, Cl. 350-345.000.
Thormann, Heinz: *See—*
Zeller, Karl S.; and Thormann, Heinz, 4,365,903, Cl. 400-490.000.
Thorn Electrical Industries Limited: *See—*
Robinson, Kenneth B., 4,366,411, Cl. 313-272.000.
Thorpe, David, to Imperial Chemical Industries Limited. Glass fibre/-synthetic resin paste or slurry. 4,366,287, Cl. 524-871.000.
Thum, Waldemar; Lang, Gunter; Vetter, Hellmuth; and Naher, Gotthilf, to Boehringer Mannheim GmbH. Storage stable cholesterol oxidase compositions. 4,366,249, Cl. 435-188.000.
Thyssen Aktiengesellschaft: *See—*
Eschenberg, Rudolf, 4,366,258, Cl. 501-124.000.
TI Crypton Limited: *See—*
Everett, Geoffrey J.; and Hunt, Christopher J., 4,366,436, Cl. 324-379.000.
Timmler, Helmut: *See—*
Kramer, Wolfgang; Timmler, Helmut; Buchel, Karl H.; Brandes, Wilhelm; Frohberger, Paul-Ernst; and Scheinpflug, Hans, 4,366,152, Cl. 424-245.000.
TMC Corporation: *See—*
Nitschko, Theodor; and Edinger, Franz K., 4,365,822, Cl. 280-625.000.
Wittmann, Heinz, 4,365,823, Cl. 280-637.000.
Tobias, Michael A., to Mobil Oil Corporation. Acrylic modified anionic water dispersible polystyrene. 4,366,293, Cl. 525-301.000.
Todd, Mike J.; and Lee, Jeffrey A., to H. B. Fuller Company. Floor polishing machine. 4,365,377, Cl. 15-98.000.
Toepsch, Hans: *See—*
Friemann, Hans; Moretto, Hans-Heinrich; Alberts, Heinrich; de Montigny, Armand; and Toepsch, Hans, 4,366,286, Cl. 524-588.000.
Toho Beslon Co., Ltd.: *See—*
Ikegami, Shigeru; Kawakatsu, Yoshihumi; Hirai, Minoru; and Izumi, Kazuo, 4,366,085, Cl. 252-431.00C.
Tojo, Kenji; Hosoda, Taisei; Ikegawa, Masato; and Shiibayashi, Masao, to Hitachi, Ltd. Scroll compressor provided with means for pressing an orbiting scroll member against a stationary scroll member and self-cooling means. 4,365,941, Cl. 417-372.000.
Tokico Ltd.: *See—*
Aono, Masami, 4,365,845, Cl. 303-6.00C.
Toko, Inc.: *See—*
Yoneyama, Toshikazu, 4,366,468, Cl. 340-347.0NT.
Tokorozawa, Sadao; and Shimizu, Toyoji, to Pilot Man-Nen-Hitsu Kabushiki Kaisha. Liquid discharge apparatus. 4,365,728, Cl. 222-209.000.
Tokuda, Ryuji; and Andresen, Bernhard H., to Canon, Inc.; and Texas Instruments Incorporated. Signal processing circuitry for a distance measuring system. 4,365,878, Cl. 354-25.000.
Tokudome, Hiroshi: *See—*
Watanabe, Kouji; and Tokudome, Hiroshi, 4,365,857, Cl. 339-17.00C.
Tokyo Kogaku Kikai Kabushiki Kaisha: *See—*
Nunokawa, Kazuo, 4,365,872, Cl. 351-208.000.
Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Akai, Yoshimi; Hirose, Masahiko; and Sanpei, Hideo, 4,366,208, Cl. 428-421.000.
Aoki, Kiyoshi; and Ichinose, Kazuaki, 4,366,554, Cl. 365-155.000.
Baba, Masaharu; Honda, Kiyokazu; and Hashima, Akiyoshi, 4,365,396, Cl. 29-25.130.
Hirose, Masahiko; and Akai, Yoshimi, 4,365,587, Cl. 118-723.000.
Hyodo, Kouichi, 4,366,435, Cl. 324-158.0SC.
Kusakabe, Hiromi; and Nagumo, Masahide, 4,366,448, Cl. 330-268.000.
Mizunoya, Kiyoshi; Matsumoto, Shoichi; Tomii, Hitoshi; Kawamoto, Masahiro; and Wada, Yuusuke, 4,366,080, Cl. 252-299.300.
Morita, Hiroshi; and Miyai, Keiko, 4,365,870, Cl. 350-357.000.
Murakami, Reiji; and Nakajima, Shunichi, 4,365,886, Cl. 355-3.0SH.
Nieda, Yasuhiro; Honda, Kiyokazu; and Shinada, Hidehiro, 4,366,409, Cl. 313-221.000.

Satoh, Seiichi, 4,366,357, Cl. 219-10.55B.
Takenaka, Shigeo; and Kamohara, Eiji, 4,366,415, Cl. 313-457.000.
Takeuchi, Masaki, 4,366,119, Cl. 422-65.000.
Washida, Hiroshi; Yano, Kensaku; and Yamaoka, Yoshio, 4,366,413, Cl. 313-377.000.
Yamada, Hisashi, 4,366,442, Cl. 330-51.000.
Yokoyama, Nobuo, 4,366,416, Cl. 315-58.000.

Tolasch, Gerhard; Base, Horst; and Bantien, Jurgen, to Hauni-Werke Korber & Co. KG. Apparatus for transport and temporary storage of cigarettes or the like between producing and processing machine. 4,365,702, Cl. 198-347.000.

Tolliver, Wilbur E. Self-lubricating pipe joint seal with rupturable membrane. 4,365,818, Cl. 277-237.00R.

Tom, Henry K.; and Rowley, Gerald L., to Syva Company. Concentrating zone method in heterogeneous immunoassays. 4,366,241, Cl. 435-7.000.

Tomesch, John C., to Sandoz, Inc. Tropyl derivatives. 4,366,154, Cl. 424-247.000.

Tomii, Hitoshi: *See*—
Mizunoya, Kiyoshi; Matsumoto, Shoichi; Tomii, Hitoshi; Kawamoto, Masahiro; and Wada, Yuusuke, 4,366,080, Cl. 252-299.300.

Tomioka, Tatsuya; and Ogata, Norio, to Idemitsu Kosan Company Limited. Flame retardant polycarbonate resin composition. 4,366,279, Cl. 524-289.000.

Toray Industries, Inc.: *See*—
Kurihara, Masaru; Watanabe, Tetsuo; and Inoue, Tetsuo, 4,366,062, Cl. 210-651.000.
Matsumoto, Tadayuki; Imaeda, Kozo; Mineo, Masatoshi; and Nakagawa, Kiyoshi, 4,365,394, Cl. 28-258.000.

Toray Silicone Co., Ltd.: *See*—
Hamada, Mitsuo; and Yasuda, Sadami, 4,366,278, Cl. 524-210.000.
Ona, Isao; and Ozaki, Masaru, 4,366,001, Cl. 106-287.110.

Torck, Bernard: *See*—
Convers, Alain; Torck, Bernard; Euzen, Jean-Paul; and Amigues, Pierre, 4,366,327, Cl. 568-697.000.

Torii, Soichi, to Torii Winding Machine Co., Ltd. Shuttle utilized for a circular loom. 4,365,651, Cl. 139-13.00A.

Torii Winding Machine Co., Ltd.: *See*—
Torii, Soichi, 4,365,651, Cl. 139-13.00A.

Toriumi, Yasuo: *See*—
Miyamoto, Yoshimi; Kojima, Keiichi; and Toriumi, Yasuo, 4,366,464, Cl. 338-214.000.

Toth, Istvan: *See*—
Czegledi, Bela; Csovari, Mihaly; Erdelyi, Miklos; Streker, Lajos; Toth, Istvan; Szabo nee Mogyorosi, Katalin; Riederauer, Szilard; and Szentgyorgyi, Geza, 4,366,129, Cl. 423-112.000.

Toulios, Peter P., to Northern Illinois Gas Company. Low profile antenna for data transponders. 4,366,486, Cl. 343-899.000.

Towmotor Corporation: *See*—
McVeen, Milford D., 4,365,693, Cl. 187-9.00E.

Townsley, Charles W.: *See*—
Lawrence, Paul J.; and Townsley, Charles W., 4,365,970, Cl. 436-66.000.

Toyama, Kouichi; Sugiura, Yasushi; and Adachi, Michio, to Nippondenso Co., Ltd. Distributor assembly having an ignition coil therein. 4,365,609, Cl. 123-635.000.

Toyo Denki Seizo Kabushiki Kaisha: *See*—
Kohata, Masakazu; Hayashi, Hideki; and Miyashita, Ichiro, 4,366,533, Cl. 363-136.000.

Toyo Kogyo Co., Ltd.: *See*—
Iriyama, Toru, 4,365,826, Cl. 280-779.000.

Toyo Kohan Co., Ltd.: *See*—
Tanaka, Atsuo; Okamura, Takaaki; Kanda, Katsumi; and Kondo, Yoshikazu, 4,366,1 .5, Cl. 427-386.000.

Toyo Rubber Industry Co., Ltd., The: *See*—
Yoshida, Akira; and Kan, Masanori, 4,365,659, Cl. 152-354.00R.

Toyo Seikan Kaisha, Limited: *See*—
Hirota, Kazumi; and Matsuoka, Kikuo, 4,365,498, Cl. 72-351.000.
Hirota, Kazumi; and Matsuoka, Kikuo, 4,365,499, Cl. 72-351.000.

Toyoda Koki Kabushiki Kaisha: *See*—
Eto, Kunihiko; Yamakage, Tetsurou; and Niwa, Kuniyuki, 4,366,421, Cl. 318-466.000.
Munekata, Kenichi; Suzuki, Yasuo; and Ohta, Norio, 4,365,446, Cl. 51-268.000.

Toyota Jidosha Kabushiki Kaisha: *See*—
Morita, Akiyoshi; and Sato, Mitsuyoshi, 4,366,110, Cl. 264-328.130.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
Inoue, Yozo; Hara, Kiyoshi; and Ito, Yoji, 4,365,663, Cl. 165-12.000.
Morishita, Teru; Sugiyama, Matsuyoshi; and Suzuki, Toshikazu, 4,365,759, Cl. 239-703.000.
Numazawa, Akio; Katayama, Nobuaki; Ikemoto, Kazuhito; Sasaki, Kan; and Terakura, Yukio, 4,365,523, Cl. 74-606.00R.
Sugiyama, Matsuyoshi; Morishita, Teru; and Suzuki, Toshikazu, 4,365,760, Cl. 239-703.000.

Tractech, Inc.: *See*—
Dissett, Walter L.; and Bawks, James R., 4,365,524, Cl. 74-715.000.

Tradowsky, Michael. Dental articulator. 4,365,955, Cl. 433-57.000.

Treppler, Marc A., to ACF Industries, Incorporated. Hold down latch assembly for hatch covers. 4,365,832, Cl. 292-256.500.

Tribe, Leonard T.: *See*—
Neill, Daniel L.; and Tribe, Leonard T., 4,365,406, Cl. 29-593.000.

Trickel, Lorn L.; and Stultz, William H. Railroad-highway crossing deck component. 4,365,743, Cl. 238-8.000.

Trieselt, Wolfgang: *See*—
Vodrazka, Wolfgang; Klahr, Erhard; Oppenlaender, Knut; Trieselt, Wolfgang; Stoeckigt, Dieter; and Neumann, Werner, 4,366,326, Cl. 568-613.000.

Trinh, Ngoc-Giao, to IREQ - Institut de Recherche de l'Hydro-Quebec. Composite profile spacer for compressed gas insulated co-axial electrical cables. 4,366,340, Cl. 174-28.000.

Tripodi, Robert, to United Technologies Corporation. Enhanced vaporization/condensation heat pipe. 4,365,661, Cl. 165-1.000.

Triumph Adler, A.G.: *See*—
Gottsmann, Helmut; and Theilen, Rolf, 4,365,900, Cl. 400-57.000.

Tru-Eze Manufacturing Co.: *See*—
Wilhelm, Tru G.; Ross, Heinz C.; and Wilhelm, Bradley T., 4,365,623, Cl. 128-75.000.

Trutzschler GmbH & Co. KG: *See*—
Beneke, Wolfgang; and Leifeld, Ferdinand, 4,365,389, Cl. 19-200.000.
Marx, Hans-Jurgen, 4,365,764, Cl. 241-101.00A.

TRW Inc.: *See*—
Hyde, Robert L., 4,365,506, Cl. 73-151.000.

Tsai, Tsu-tzu: *See*—
Rosenberg, Harold; and Tsai, Tsu-tzu, 4,366,323, Cl. 556-433.000.

Tsuda, Shin; Kurabayashi, Sadasuke; and Ogata, Minoru, to Canon Kabushiki Kaisha. Information forming apparatus. 4,366,505, Cl. 358-260.000.

Tsuge, Kazunori: *See*—
Shiozaki, Ken; Tsuge, Kazunori; and Ohnishi, Akira, 4,366,093, Cl. 252-477.00R.

Tsuji, Masahiro, to Nikon Kogyo Kabushiki Kaisha. Copper alloy for use as lead material for semiconductor devices. 4,366,117, Cl. 420-481.000.

Tsuji, Shinji: *See*—
Hirao, Motohisa; Nakamura, Michiharu; Doi, Atsutoshi; Tsuji, Shinji; Takeda, Yutaka; and Mori, Takao, 4,366,569, Cl. 372-46.000.

Tsuji, Teruji: *See*—
Yoshioka, Mitsuru; Uyeo, Shoichiro; Hamashima, Yoshio; Kikkawa, Ikuo; Tsuji, Teruji; and Nagata, Wataru, 4,366,316, Cl. 544-90.000.

Tsukada, Shusei: *See*—
Hosono, Nagao; Miyake, Nobuyuki; Kanbe, Junichiro; Tsukada, Shusei; and Arao, Kozo, 4,365,586, Cl. 118-652.000.

Tsukagoshi, Tsunehiro; Yokozeki, Shinichi; Hagiwara, Sumio; Uchidoi, Masataka; Yoshino, Toshikazu; and Arai, Yasuyuki, to Pioneer Electronic Corporation. Tone-arm elements. 4,366,205, Cl. 428-338.000.

Tsunekawa, Tokuichi; Date, Nobuaki; Aizawa, Hiroshi; Hosoe, Kazuya; and Urushibara, Kazunori, to Canon Kabushiki Kaisha. Image recording system. 4,366,501, Cl. 358-310.000.

Tsuprov, Sergei A.: *See*—
Chukhanov, Zinovy F.; Chukhanov, Zinovy Z.; Tsuprov, Sergei A.; Lyashenko, Ivan V.; Apter, Danil M.; Nikolaev, Anatoly M.; and Karasev, Vadim A., 4,366,043, Cl. 208-8.00R.

Tulacs, Laszlo: *See*—
Zima, Herbert; and Tulacs, Laszlo, 4,366,282, Cl. 524-317.000.

Turlej, Zbigniew W., to S.A. Armstrong Limited. Starting circuit for single phase electric motors. 4,366,426, Cl. 318-786.000.

Turnbull, Robert J.; Foster, Christopher A.; and Hendricks, Charles D., to United States of America, Energy. Solid evacuated microspheres of hydrogen. 4,366,112, Cl. 376-151.000.

Turner, George W.; Fan, John C. C.; and Salerno, Jack P., to Massachusetts Institute of Technology. Compensating semiconductor materials. 4,366,338, Cl. 136-258.000.

Turner, Robert, to Cam Gears Limited. Power assisted gear assembly. 4,365,684, Cl. 180-133.000.

Twardawa, Philip A.: *See*—
Couture, Joseph E. G.; and Twardawa, Philip A., 4,365,557, Cl. 102-341.000.

Twiehaus, Hans-Jurgen: *See*—
Holter, Heinz; Gresch, Heinz; Igelbuscher, Heinrich; Dewert, Heribert; Dzikowski, Berthold; and Twiehaus, Hans-Jurgen, 4,366,132, Cl. 423-242.000.

Tyhach, Richard J.: *See*—
Rupchock, Patricia A.; and Tyhach, Richard J., 4,366,243, Cl. 435-7.000.

Tyler, Manuel C., Jr.; and McCrary, Avis L., to Dow Chemical Company, The. Stable precatalyzed epoxy resin compositions. 4,366,295, Cl. 525-482.000.

Tyler Refrigeration Corporation: *See*—
Abraham, Fayez; and Bowman, Edward, 4,365,983, Cl. 62-81.000.

Tyus, Philranzo M. Promotional phonograph record album. 4,365,708, Cl. 206-309.000.

Ube Industries, Ltd.: *See*—
Suzukawa, Yuichi; Kobayashi, Waichi; and Ohtaka, Satoshi, 4,366,257, Cl. 501-123.000.

Uchida, Kiichi: *See*—
Soma, Eichi; Kobayashi, Kohei; Karakawa, Takuro; Kato, Shigeyoshi; and Uchida, Kiichi, 4,366,308, Cl. 536-128.000.

Uchida, Masaaki; Kanegae, Hidetoshi; and Ishitani, Shigeo, to Nissan Motor Company, Limited. Oxygen sensing device having means for control of current to produce reference oxygen partial pressure. 4,366,039, Cl. 204-195.00S.

Uchidoi, Masataka: *See*—
Tsukagoshi, Tsunehiro; Yokozeki, Shinichi; Hagiwara, Sumio; Uchidoi, Masataka; Yoshino, Toshikazu; and Arai, Yasuyuki, 4,366,205, Cl. 428-338.000.

Uchimura, Mitsuo; Oana, Masao; and Nishimura, Yoshiharu. Postal charge processing system having a count of successive weight measuring operations. 4,366,552, Cl. 364-900.000.
Ueno, Norio; Kato, Seiji; and Iwata, Atsushi, to Fujitsu Limited; and Nippon Telegraph & Telephone Public Corporation. Switched-capacitor filter. 4,366,456, Cl. 333-173.000.
Ueno, Takeshi: *See*—
Masuda, Toyohiko; Ueno, Takeshi; Nagai, Yoji; Ishimaru, Hitoshi; and Nakamura, Shozo, 4,365,476, Cl. 60-686.000.
Uiga, Endel, to Cordell Engineering, Inc. Copy camera focusing. 4,365,891, Cl. 355-59.000.
Uitvlugt, Martin W.: *See*—
Bradshaw, Cyril E.; and Uitvlugt, Martin W., 4,365,608, Cl. 123-568.000.
Ujikawa, Norihisa; and Nakayama, Masaharu, to Nippon Oil and Fats Co., Ltd. Unsaturated polyester resin composition. 4,366,290, Cl. 525-169.000.
Ullman, John E., to Mead Corporation, The. Method of and apparatus for packaging. 4,365,456, Cl. 53-69.000.
Umemura, Toshikazu: *See*—
Amemiya, Akira; Kunii, Tadashi; Furusawa, Tomotaka; Takeda, Mutsuhiko; Tanaka, Katsumasa; Umemura, Toshikazu; Ono, Yoshihiro; Masumoto, Isamu; Nakao, Noriyasu; and Furukawa, Masanori, 4,366,305, Cl. 528-230.000.
Unger, Peter: *See*—
Pert, James H.; Unger, Peter; Harris, Hervie L.; and Pert, James C., 4,365,629, Cl. 128-214.00D.
Union Carbide Corporation: *See*—
Gardner, Harry E., 4,366,126, Cl. 423-7.000.
Kopf, Peter W., 4,366,303, Cl. 528-129.000.
Union Oil Company of California: *See*—
Baron, Kenneth; and McArthur, Dennis P., 4,366,083, Cl. 252-416.000.
Irish, Glenn E., 4,365,973, Cl. 44-56.000.
Unisearch Limited: *See*—
Wainwright, Mark S.; Marsden, Warwich L.; and Friedrich, Jan B., 4,366,260, Cl. 518-713.000.
Unitech Engineering Ltd.: *See*—
Sugiyama, Jin, 4,365,564, Cl. 112-121.120.
United Air Specialists, Inc.: *See*—
Darm, William J., 4,365,480, Cl. 62-82.000.
United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See*—
Gray, George W.; Lacey, David; Jenner, John A.; and Pellatt, Martin G., 4,366,330, Cl. 568-775.000.
United Merchants & Manufacturers, Inc.: *See*—
Gregorian, Razmic S.; Namboodri, Chettoor G.; and Johnson, John D., 4,365,968, Cl. 8-477.000.
United States of America
Agriculture: *See*—
Bruno, Joseph S.; and Blanchard, Eugene J., 4,365,966, Cl. 8-471.000.
Graham, Clarence O., Jr.; Shepard, Charles L.; and Kullman, Russell M. H., 4,365,464, Cl. 57-12.000.
Haines, Donald A.; Frost, John S.; and Klumpp, Rosalie J., 4,365,504, Cl. 73-3.000.
Air Force: *See*—
Rosenberg, Harold; and Tsai, Tsu-tzu, 4,366,323, Cl. 556-433.000.
Army: *See*—
Durenec, Peter, 4,365,982, Cl. 62-6.000.
Freeman, Wallace L., 4,366,229, Cl. 430-312.000.
Pearlstein, Fred; and Evans, Carroll F., 4,365,481, Cl. 62-123.000.
Reibel, Paul F., 4,365,556, Cl. 102-307.000.
Energy: *See*—
Christiansen, David W.; and Smith, Bob G., 4,366,116, Cl. 376-446.000.
Cotter, Theodore P., 4,366,379, Cl. 250-251.000.
Turnbull, Robert J.; Foster, Christopher A.; and Hendricks, Charles D., 4,366,112, Cl. 376-151.000.
Navy: *See*—
Doerschuk, David C.; and Mank, James F., 4,365,351, Cl. 2-2.10R.
Dunlap, Richard M., 4,365,475, Cl. 60-673.000.
U.S. Philips Corporation: *See*—
Barten, Piet G. J., 4,366,419, Cl. 315-382.000.
Borghans, Joseph H., 4,366,517, Cl. 360-118.000.
de Haan, Maarten R.; and Carasso, Marino G., 4,366,564, Cl. 369-48.000.
Dijkmans, Eise C.; Franssen, Nico V., deceased; and De Haan, Friedrich J., administrator, 4,366,346, Cl. 179-1.00J.
Haubrich, Lothar; and Durr, Heinrich, 4,365,901, Cl. 400-124.000.
Janak, Miloslav; Schonwald, Helmut; Tercic, Eduard; and Ginsberg, Martin, 4,366,512, Cl. 360-48.000.
Jarry, Philippe; Guittard, Pierre; and Ducarre, Alphonse, 4,366,009, Cl. 148-171.000.
Marsoner, Gunter, 4,366,402, Cl. 310-68.00B.
van Riet, Martin A., 4,366,341, Cl. 174-48.000.
U.S. Product Development Co.: *See*—
Adell, Robert, 4,365,450, Cl. 52-98.000.
United States Steel Corporation: *See*—
Mihelic, Edward L.; and Schlosberg, Samuel B., 4,366,064, Cl. 210-668.000.
United Technologies Corp.: *See*—
Mard, Kenneth C.; and Washburn, S. John, 4,365,770, Cl. 244-17.110.
Matthews, John A.; Washburn, David A.; and Sarli, Vito J., 4,365,470, Cl. 60-39.320.
Tripodi, Robert, 4,365,661, Cl. 165-1.000.
University of California, The Regents of The: *See*—
Bettencourt, Thomas S.; and Freeman, Daniel L., 4,365,4€ , Cl. 56-327.00R.
Unkelbach, Karl-Heinz: *See*—
Imhof, Rainer; Grunberg, Wolf-Diethard; and Unkelbach, Karl-Heinz, 4,365,510, Cl. 73-313.000.
UOP Inc.: *See*—
Antos, George J., 4,366,091, Cl. 252-466.0PT.
Wagner, Walter R.; and Benson, Henry E., 4,365,669, Cl. 166-231.000.
Upjohn Company, The: *See*—
Axen, Udo F., 4,366,313, Cl. 542-426.000.
Gilbertson, Terry J., 4,366,320, Cl. 548-264.000.
Lednicer, Daniel, 4,366,172, Cl. 424-330.000.
Urech, Karl; Habermeier, Jurgen; and Moser, Roland, to Ciba-Geigy Corporation. Liquid matrix system based on a mixture of epoxide resin and an amine curing agent for producing fibre-reinforced plastics components. 4,366,108, Cl. 264-137.000.
Uriya, Yuichi: *See*—
Kubota, Shikibu; and Uriya, Yuichi, 4,365,522, Cl. 74-475.000.
Urushibara, Kazunori: *See*—
Tsunekawa, Tokuichi; Date, Nobuaki; Aizawa, Hiroshi; Hosoe, Kazuya; and Urushibara, Kazunori, 4,366,501, Cl. 358-310.000.
Usadel, Klaus H.: *See*—
Szabo, Sandor; and Usadel, Klaus H., 4,366,148, Cl. 424-177.000.
Ushikoshi, Kenichi; and Hiraga, Imao, to Kabushiki Kaisha Suwa Seikosha. Gear train of an electronic timepiece. 4,365,899, Cl. 368-220.000.
Uyeo, Shoichiro: *See*—
Yoshioka, Mitsuru; Uyeo, Shoichiro; Hamashima, Yoshio; Kikkawa, Ikuo; Tsuji, Teruji; and Nagata, Wataru, 4,366,316, Cl. 544-90.000.
Valeron Corporation, The: *See*—
Rich, Dennis J.; and Holtz, Frederick C., Jr., 4,366,254, Cl. 501-89.000.
Valimont, James L.; and Phares, Hershel L., to PPG Industries, Inc. Shaped mold and a method of using same to assemble sandwich of a sheet of flexible interlayer material with bent glass sheets. 4,366,013, Cl. 156-102.000.
Valmet Oy: *See*—
Hietaranta, Matti, 4,365,519, Cl. 73-862.520.
Valvoline Oil & Chemicals Ltd.: *See*—
Mitsopoulos, Tom; Jhaveri, Satish; and Lui, Charles, 4,366,266, Cl. 523-143.000.
Van Blokland, Gerardus J.; and Bailey, Henry J., to Oldelft Corporation of America. Sheet film feeder. 4,365,793, Cl. 271-3.100.
Vandenberg, Leonard B. Self-aligning solar collector. 4,365,616, Cl. 126-424.000.
van der Wal, Auke, to Vereenigde Metaaalverpakking en Hechtdraad Industrie B.V. MVM-ENDRA. Devices for applying a thermoplastic tape around an object or a stack of objects. 4,366,021, Cl. 156-468.000.
Van Hatten, David A., to Control Data Corporation. Demand driven access mechanism. 4,366,480, Cl. 340-825.510.
Van Loveren, Augustinus G.: *See*—
Boden, Richard M.; Dekker, Lambert; Schmitt, Frederick L.; and Van Loveren, Augustinus G., 4,366,078, Cl. 252-174.110.
van Nederveen, Hans B.; and Verburgh, Martin B., to SKF Engineering and Research Centre, B.V. Drill bit. 4,365,679, Cl. 175-371.000.
van Riet, Martin A., to U.S. Philips Corporation. Bridge for connecting cable channel systems. 4,366,341, Cl. 174-48.000.
Varco International, Inc.: *See*—
Boyadjieff, George I.; and Campbell, Andrew B., 4,365,676, Cl. 175-61.000.
Varian Associates: *See*—
Feinleib, Morris, 4,366,222, Cl. 430-127.000.
Varner, Jerry R.: *See*—
Kurtz, Clark N.; Mir, Jose M.; and Varner, Jerry R., 4,366,500, Cl. 358-75.000.
Vasconcellos, Daniel F.: *See*—
Johnson, Norman E.; and Vasconcellos, Daniel F., 4,365,816, Cl. 277-88.000.
Veba Oel Development, Inc.: *See*—
Frohnert, Heinz; and Steude, Klaus, 4,365,976, Cl. 55-4.000.
Veneziano, Marcello, to Ford Motor Company. False failure detection prevention in an air bag diagnostic system. 4,366,465, Cl. 340-52.00R.
Verburgh, Martin B.: *See*—
van Nederveen, Hans B.; and Verburgh, Martin B., 4,365,679, Cl. 175-371.000.
Vereenigde Metaaalverpakking en Hechtdraad Industrie B.V. MVM-ENDRA: *See*—
van der Wal, Auke, 4,366,021, Cl. 156-468.000.
Vetter, Hellmuth: *See*—
Thum, Waldemar; Lang, Gunter; Vetter, Hellmuth; and Naher, Gotthilf, 4,366,249, Cl. 435-188.000.
Vianova Kunstharz, A.G.: *See*—
Pampouchidis, Georg; and Honig, Helmut, 4,366,274, Cl. 523-415.000.
Zima, Herbert; and Tulacs, Laszlo, 4,366,282, Cl. 524-317.000.
Vickers Limited: *See*—
Jamieson, John R., 4,365,573, Cl. 114-150.000.
Victor Company of Japan, Limited: *See*—
Kasuga, Masao, 4,366,471, Cl. 340-347.0DA.

Victory Games, Inc.: *See—*
Barnes, George A.; and Sirois, Walter J., 4,365,803, Cl. 273-5.00R.
Villamosenergiaipari Kutato Intezet: *See—*
Benyak, Istvan; Dudas, Lajos; and Pohl, Oszkar, 4,366,106, Cl. 261-156.000.
Villone, Sergio: *See—*
Cedolin, Riccardo; Chiarottino, Wolmer; Giandonato, Giuseppe; Giorcelli, Silvano; Martinengo, Giorgio; Sofi, Giorgio; and Villone, Sergio, 4,366,535, Cl. 364-200.000.
Viniczay, Gabriella F.; and Huber, Kurt, to Aktiengesellschaft Adolph Saurer. Thread monitoring apparatus for textile machines. 4,365,654, Cl. 139-370.200.
Viswanathan, Krishnan: *See—*
Schulz, Arthur C.; Cook, Edward H., Jr.; and Viswanathan, Krishnan, 4,366,037, Cl. 204-98.000.
Vitola, Jack J., to Hi-G Incorporated. Miniature magnetic latch relay. 4,366,459, Cl. 335-79.000.
Vitt, Theodor, to Prameta Prazisionsmetall -und Kunststofferzeugnisse G. Baumann & Company. Concealed multi pintle latch hinge. 4,365,384, Cl. 16-333.000.
Vlock, David G. Combined dental drill and anchor pin. 4,365,958, Cl. 433-225.000.
VLSI Technology Research Association: *See—*
Sano, Shunichi; Shinozaki, Toshiaki; and Mori, Ichiro, 4,366,383, Cl. 250-492.300.
Vodrazka, Wolfgang; Klahr, Erhard; Oppenlaender, Knut; Trieselt, Wolfgang; Stoeckigt, Dieter; and Neumann, Werner, to BASF Aktiengesellschaft. Oxyalkylated fatty alcohols having end groups blocked by reaction with propylene. 4,366,326, Cl. 568-613.000.
Vogelbacher, Erich: *See—*
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Vogelsberg, Dieter, to Siemens Aktiengesellschaft. SZ Twisting device for twisting elements of electric cables. 4,365,469, Cl. 57-293.000.
Voigt, Hermann U.; and Patzke, Frank, to Kabel- u. Metallwerke Gutehoffnungshutte AG. Making shrink-fit objects. 4,366,107, Cl. 264-25.000.
Volkswagenwerk Aktienbesellschaft: *See—*
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von Konig, Anita: *See—*
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Wada, Yuusuke: *See—*
Mizunoya, Kiyoshi; Matsumoto, Shoichi; Tomii, Hitoshi; Kawamoto, Masahiro; and Wada, Yuusuke, 4,366,080, Cl. 252-299.300.
Wadia, Darius A. Method and apparatus for preheating dry raw meal prior to introduction of the meal into a suspension cycloae preheater system supplying a rotary kiln. 4,366,000, Cl. 106-100.000.
Wagensonner, Eduard: *See—*
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Wagner, Walter R.; and Benson, Henry E., to UOP Inc. Non-solvent bonded plastic well screen assembly. 4,365,669, Cl. 166-231.000.
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Waisbren, Avery; and Kelson, Arthur F. Water pulsating unit for oral syringe. 4,365,752, Cl. 239-381.000.
Wakai, Youichi, to Kabushiki Kaisha Suwa Seikosha. Time-correcting mechanism for electronic timepiece. 4,365,898, Cl. 368-187.000.
Walden, Richard G., to Metal Box Limited. Attaching closure to containers. 4,365,724, Cl. 220-67.000.
Walden, William C. Chain gauge. 4,365,420, Cl. 33-202.000.
Walker, Loren H.; and Cutler, John H., to General Electric Company. Protective method and apparatus for a controlled current inverter and motor control system. 4,366,427, Cl. 318-798.000.
Wall, Edward N.: *See—*
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Washburn, S. John: *See—*
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Washida, Hiroshi; Yano, Kensaku; and Yamaoka, Yoshio, to Tokyo Shibaura Denki Kabushiki Kaisha. Secondary electron multiplication target. 4,366,413, Cl. 313-377.000.
Washington Instrument, Inc.: *See—*
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Watanabe, Kenichi; Kinoshita, Hiroshi; Tatsumi, Akira; and Goto, Koichi, to Hitachi, Ltd. Electric fan. 4,365,542, Cl. 98-40.00V.
Watanabe, Kouji; and Tokudome, Hiroshi, to Fujitsu Limited. Connector having polarity. 4,365,857, Cl. 339-17.00C.
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Wawzonek, Stanley. Use of calcium metasilicate (wollastonite) as a formaldehyde suppressant for urea formaldehyde resins. 4,366,264, Cl. 521-122.000.
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McLaughlin, Homer C.; and Weaver, Jimmie D., 4,366,072, Cl. 252-8.55R.
McLaughlin, Homer C.; and Weaver, Jimmie D., 4,366,073, Cl. 252-8.55R.
McLaughlin, Homer C.; and Weaver, Jimmie D., 4,366,074, Cl. 252-8.55R.
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Webinger, George P., to Champion International Corporation. Take-out carton with locking cover. 4,365,739, Cl. 229-32.000.

Wedemeyer, Karlfried; and Fiege, Helmut, to Bayer Aktiengesellschaft. Process for the preparation of 3-phenoxy-benzaldehydes. 4,366,325, Cl. 568-432.000.

Weghaupt, Erich; Intichar, Lutz; and Schnapper, Christoph, to Siemens Aktiengesellschaft. Coolant replenishing system for superconducting field windings. 4,365,479, Cl. 62-55.000.

Weilenmann, Walter; and Frick, Nikolaus, to Hilti Aktiengesellschaft. Friction clutch including rolling bodies for transmitting a limited torque. 4,365,961, Cl. 464-36.000.

Weir, Donald R.; and Masters, Ian M., to Sherritt Gordon Mines Limited. Removal of arsenic from aqueous solutions. 4,366,128, Cl. 423-87.000.

Weiss, Michael A.; and Munson, Robert E., to Ball Corporation. Temperature compensated radio frequency antenna and methods related thereto. 4,366,484, Cl. 343-700.0MS.

Wells, Harold D.; and Wagner, Dennis L., to Pet Incorporated. Method of flameless broiling or baking greasy meat products. 4,366,177, Cl. 426-243.000.

Wenninger, Freddie W.: *See*—
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Werner, Anton; and Neuerburg, Horst, to Kuhn S.A. Mower having separately replaceable bearing subassembly. 4,365,462, Cl. 56-255.000.

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Wessel, Wolf; Sautter, Wilfried; and Brettschneider, Johannes, to Robert Bosch GmbH. Apparatus for improving the acceleration of an internal combustion engine driven with an exhaust turbocharger. 4,365,605, Cl. 123-502.000.

Western Electric Company, Inc.: *See*—
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Westwood, William D.; Kos, Steven; and Willemsen, Herman W., to Northern Telecom Limited. Read/write arrangement for a magnetic terminal. 4,366,488, Cl. 346-74.300.

Wetzel, Pierre, to Societe D'Assistance Technique Pour Produits Nestle S.A. Process for the production of a structure protein product. 4,366,176, Cl. 426-104.000.

Wheatcroft, John B.; and Wall, Edward N., to Staveley Chemicals Limited. Process for preparing photographic solutions containing hydroquinone monosulphonate. 4,366,234, Cl. 430-485.000.

Whirlpool Corporation: *See*—
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Wilhelm, Tru G.; Ross, Heinz C.; and Wilhelm, Bradley T., to Tru-Eze Manufacturing Co. Apparatus to exert traction in traction therapy. 4,365,623, Cl. 128-75.000.

Wilkerson, Alan W. Energy utilization circuit and method. 4,366,388, Cl. 307-46.000.

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Williams, Craig B., to M. A. Industries, Inc. Removable insert for forming holes in concrete and the like. 4,365,780, Cl. 249-11.000.

Williams, Earl P.; and Lorenz, Donald H., to GAF Corporation. Water swellable compositions. 4,366,294, Cl. 525-327.600.

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Wills, David R.; Green, Ralph E.; and Landymore, Barry W., to Anglia Autoflow Limited. Livestock handling system and apparatus therefor. 4,365,591, Cl. 119-82.000.

Wilmers, Gerhard, to Siemens Aktiengesellschaft. Circuit arrangement for the recognition of predetermined binary valves of a specific minimum duration. 4,366,557, Cl. 365-189.000.

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Wilson, George S. Workpiece tracing arc welding system. 4,366,363, Cl. 219-125.110.

Windauer, Joseph R. Urine collecting device for patients in wheelchairs. 4,365,363, Cl. 4-301.000.

Windischbauer, Florian: *See*—
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Wing, Richard E., to Dow Chemical Company, The. Filter-type respirator canister. 4,365,627, Cl. 128-202.220.

Winter, William E.; and Chang, Bong H., to Exxon Research and Engineering Co. Combination hydrorefining, heat-treating and hydrocracking process. 4,366,047, Cl. 208-89.000.

Winterton, Richard C., to Dow Chemical Company, The. Process for making a silver-gold alloy catalyst for oxidizing ethylene to ethylene oxide. 4,366,092, Cl. 252-476.000.

Witt, Enrique R.; Humphrey, William J.; and Cave, James P., to Celanese Corporation. Anaerobic treatment. 4,366,059, Cl. 210-615.000.

Witte, Willi; and Boing, Wulf, to Proll & Lohmann Betriebs - GmbH. Process for the dyeing and fixing of knitted articles of clothing. 4,365,373, Cl. 8-150.000.

Wittmann, Heinz, to TMC Corporation. Safety-straplike connecting member. 4,365,823, Cl. 280-637.000.

Wohlrab, Walter, to Krauss-Maffei Aktiengesellschaft. Three-way flow-regulating valve. 4,365,645, Cl. 137-117.000.

Wolde-Michael, Girma, to Donaldson Company, Inc. High efficiency settling system. 4,366,058, Cl. 210-519.000.

Wolde-Michael, Girma: *See*—
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Wolkovitch, Julian. Joined wing aircraft. 4,365,773, Cl. 244-45.00R.

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Workens, Frank M., to Falconer Plate Glass Corporation. Apparatus for making mirrors. 4,365,584, Cl. 118-300.000.

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Wright, Bruce R., to Associated Equipment Corporation. Battery booster cable assembly. 4,366,430, Cl. 320-25.000.

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Yaegashi, Hirokatsu; and Watanabe, Shinichi, to Hirose Electric Co., Ltd. Electric connector for coaxial ribbon cable. 4,365,856, Cl. 339-14.00R.

Yagi, Motohiko, to Fuji Photo Film Co., Ltd. Phosphate glass compositions, and glass-ceramic materials, and methods of making the same. 4,366,253, Cl. 501-63.000.
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Yamada, Hisashi, to Tokyo Shibaura Denki Kabushiki Kaisha. Amplifier with muting circuit. 4,366,442, Cl. 330-51.000.
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Yamazumi, Kaishu: *See*—
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Yatomi, Takeshi; Tanaka, Yutaka; and Ozaki, Yoshio, to Mitsubishi Denki Kabushiki Kaisha. Wire cut electric discharge machining control method. 4,366,359, Cl. 219-69.00M.
Yokoyama, Nobuo, to Tokyo Shibaura Denki Kabushiki Kaisha. Fluorescent lamp device. 4,366,416, Cl. 315-58.000.
Yokoyama, Shigeki; and Ohga, Kunihiko, to Fuji Photo Film Co., Ltd. Silver halide photographic materials. 4,366,238, Cl. 430-529.000.
Yokozeki, Shinichi: *See*—
Tsukagoshi, Tsunehiro; Yokozeki, Shinichi; Hagiwara, Sumio; Uchidoi, Masataka; Yoshino, Toshikazu; and Arai, Yasuyuki, 4,366,205, Cl. 428-338.000.
Yoneyama, Toshikazu, to Toko, Inc. Charge-balanced analog-to-digital converter. 4,366,468, Cl. 340-347.0NT.
Yoon, Young Z.: *See*—
Fillman, Russell L.; and Yoon, Young Z., 4,365,452, Cl. 52-173.0DS.
Yoshida, Akira; and Kan, Masanori, to Toyo Rubber Industry Co., Ltd., The. Pneumatic safety tire. 4,365,659, Cl. 152-354.00R.
Yoshida Kogyo K.K.: *See*—
Ooura, Yasumasa, 4,365,403, Cl. 29-408.000.
Yoshida, Masahide: *See*—
Sato, Masaaki; Miyaji, Kazumi; Yoshida, Masahide; Fukuoka, Norio; Nakasho, Kazuo; and Furuta, Kenji, 4,366,514, Cl. 360-74.400.
Yoshino Kogyosho Co., Ltd.: *See*—
Saito, Tadao; Kishi, Takao; and Kakuta, Yoshiyuki, 4,365,729, Cl. 222-321.000.
Saito, Tadao; and Tasaki, Takaharu, 4,365,751, Cl. 239-333.000.
Yoshino, Toshikazu: *See*—
Tsukagoshi, Tsunehiro; Yokozeki, Shinichi; Hagiwara, Sumio; Uchidoi, Masataka; Yoshino, Toshikazu; and Arai, Yasuyuki, 4,366,205, Cl. 428-338.000.
Yoshioka, Mitsuru; Uyeo, Shoichiro; Hamashima, Yoshio; Kikkawa, Ikuo; Tsuji, Teruji; and Nagata, Wataru, to Shionogi & Co., Ltd. 1-Oxadethiacepham compounds and process for producing said compounds. 4,366,316, Cl. 544-90.000.
Young-Bandala, Linda: *See*—
Reynolds, Martin M.; and Young-Bandala, Linda, 4,366,178, Cl. 426-393.000.
Young Dental Manufacturing Company: *See*—
Bailey, Ronald L., 4,365,956, Cl. 433-115.000.
Yuasa, Teruo: *See*—
Numata, Satoshi; Nakatani, Kiyoshi; Yamazaki, Noboru; and Yuasa, Teruo, 4,366,328, Cl. 568-734.000.
Yukawa, Muneaki, to K.K. Musashino Kagaku Kenkyusho; and Ciba-Geigy AG. Organic polymeric materials stabilized with acylated hydroxy acid type compounds. 4,366,280, Cl. 524-291.000.
Yuminaka, Takeo: *See*—
Masuda, Ikuro; Shiraishi, Hisayoshi; Ogawa, Seiichiro; Shiono, Shigeo; Sakurai, Jinichi; and Yuminaka, Takeo, 4,366,478, Cl. 340-825.000.
Z-L Limited Partnership: *See*—
Zilliken, Fritz W., 4,366,082, Cl. 252-404.000.
Zilliken, Fritz W., 4,366,248, Cl. 435-125.000.
Z.S. Electroniques (Proprietary) Limited: *See*—
Hodgkinson, Alec J., 4,366,485, Cl. 343-791.000.
Zacharias, Ellis M., Jr., to Mapco, Inc. Flow straighteners in axial flowmeters. 4,365,518, Cl. 73-861.310.
Zaghi, Hooshmand, to Gould Inc. Strain gage transducers. 4,365,520, Cl. 73-862.630.
Zaitsev, Anatoly M.: *See*—
Karpov, Jury A.; Burylev, Boris P.; Glavin, German G.; Kvin, Valeria E.; Kovalev, Vasily V.; Natanson, Konstantin J.; Orlov, Vladimir V.; Kuznetsov, Lev B.; Zaitsev, Anatoly M.; Kartsev, Valentin E.; Morozov, Vladimir M.; and Kovalev, Gennady G., 4,365,969, Cl. 436-75.000.
Zambelli, Adolfo: *See*—
Beach, David L.; and Zambelli, Adolfo, 4,366,086, Cl. 252-431.00R.
Zavatkay, Robert J.; Kurasz, George W.; and Devaux, Robert R., to Barnes Group Inc. Spring cartridge for spring operated re-wind mechanism. 4,365,690, Cl. 185-45.000.
Zdaniewski, Joseph J.; Penn, William B.; and Balke, Roy L., to General Electric Company. Method of making an insulated pole and coil assembly. 4,365,407, Cl. 29-598.000.
Zeller, Karl S.; and Thormann, Heinz, to Siemens Aktiengesellschaft. Lockable key with luminescent display for office typewriters and teleprinters. 4,365,903, Cl. 400-490.000.
Zelman, Chaim: *See*—
Buttner, Ronald; Dolowich, Herbert; and Zelman, Chaim, 4,365,535, Cl. 84-421.000.
Zhuravlev, Oleg V.: *See*—
Brounshtein, Viktor B.; Petrov, Vladimir I.; Otsup, Rudolf R.; Ignatieva, Galina P.; Kozlovsky, Vladlen V.; Lipshits, Leonard Y.; Zhuravlev, Oleg V.; Koba, Mikhail G.; Seliverstov, Konstantin B.; Igisheva, Tamara A.; Drobyazko, Petr A.; Motin, Anatoly I.; Fot, Viktor D.; Yakimov, Lev T.; and Kuznetsov, Boris G., 4,366,124, Cl. 422-278.000.
Zidele, Israel. Reversible baseball glove. 4,365,352, Cl. 2-19.000.
Ziegler, Eugene: *See*—
Bixby, Robert P.; and Ziegler, Eugene, 4,366,029, Cl. 202-262.000.
Ziegler, Herwin G., to BBC, Brown, Boveri & Company, Limited. Brush assembly for dynamoelectric machines. 4,366,404, Cl. 310-239.000.
Zilliken, Fritz W., to Z-L Limited Partnership. Isoflavones and related compounds, methods of preparing and using and antioxidant compositions containing same. 4,366,082, Cl. 252-404.000.
Zilliken, Fritz W., to Z-L Limited Partnership. Fermentation method of preparing antioxidants. 4,366,248, Cl. 435-125.000.
Zima, Herbert; and Tulacs, Laszlo, to Vianova Kunstharz, A.G. Aqueous coating compositions for wood surfaces. 4,366,282, Cl. 524-317.000.

Zinck, Joseph W.; and Affolder, Steven L., to CTS Corporation. Process and apparatus for continuously loading pallets with ceramic articles. 4,365,705, Cl. 198-424.000.

Zuev, Vladimir T.: *See*—
Kurovich, Arkady N.; Krasnokutsky, Jury B.; Sysoev, Vyacheslav N.; Golman, Lev D.; Zuev, Vladimir T.; Nesterov, Viktor I.; and Laboda, Viktor A., 4,365,494, Cl. 72-63.000.

Zukeran, Chousei. Wind-driven prime mover. 4,365,935, Cl. 416-117.000.

Zuleeg, Rainer: *See*—
Notthoff, Johannes K.; and Zuleeg, Rainer, 4,366,377, Cl. 250-211.00J.

3G Corporation: *See* –
Graham, J. Clifford; Gallien, Shelby W.; and Gill, Maurice P., 4,365,988, Cl. 71-34.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 28TH DAY OF DECEMBER, 1982

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Berg, William E., to Tektronix, Inc. Electrical connector. Re. 31,114, Cl. 339-17.0CF.

Black, John W., to Pemco-Kalamazoo, Inc. Solid axle wheel support and sealed bearing construction. Re. 31,110, Cl. 16-46.000.

Coker, Charles M.; and Kling, Gary M. Variable resistance lifting mechanism. Re. 31,113, Cl. 272-118.000.

Hagen, Glenn E., to Williams, Inc. Wave driven generator. Re. 31,111, Cl. 60-500.000.

Kling, Gary M.: *See*—
Coker, Charles M.; and Kling, Gary M., Re. 31,113, Cl. 272-118.000.

Pemco-Kalamazoo, Inc.: *See*—
Black, John W., Re. 31,110, Cl. 16-46.000.

Prikkel, John, III. Automatic flue damper. Re. 31,112, Cl. 236-1.00G.

Tektronix, Inc.: *See*—
Berg, William E., Re. 31,114, Cl. 339-17.0CF.

Williams, Inc.: *See*—
Hagen, Glenn E., Re. 31,111, Cl. 60-500.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Carlson, Edgar; Henke, Alfred M.; Lehrian, William R.; McKinney, Joel D.; and Metzger, Kirk J., to Gulf Research & Development. Asphaltene hydrodesulfurization with small catalyst particles utilizing a hydrogen quench for the reaction. B1 Re. 29,315, Cl. 208—216.

Gulf Research & Development: *See*—
Carlson, Edgar; Henke, Alfred M.; Lehrian, William R.; McKinney, Joel D.; and Metzger, Kirk J. B1 Re. 29,315.

Carlson, Edgar; Henke, Alfred M.; Lehrian, William R.; McKinney, Joel D.; and Metzger, Kirk J., to Gulf Research & Development. Asphaltene hydrodesulfurization with small catalyst particles in a parallel reactor system. B1 Re. 29,314, Cl. 208—216.

Gulf Research & Development: *See*—
Carlson, Edgar; Henke, Alfred M.; Lehrian, William R.; McKinney, Joel D.; and Metzger, Kirk J. B1 Re. 29,314.

LIST OF DESIGN PATENTEES

Abe, Yoichi; and Matsumoto, Hajime, to Toybox Corporation. Toy pendant. 267,418, 12-28-82, Cl. D21-62.000.

Amarger, Guy, to Compagnie Generale des Etablissements Michelin. Tire. 267,400, 12-28-82, Cl. D12-147.000.

Anderson, Robert C.: *See*—
Kroeger, Daniel E.; and Anderson, Robert C., 267,391, Cl. D8-18.000.

Becker, Robert W.: *See*—
Boldt, Melvin H.; Morrison, Thurber H.; Becker, Robert W.; and Huff, Robert S., 267,424, Cl. D23-122.000.

Behrens, Irene A. Display rack for clothing and accessories. 267,373, 12-28-82, Cl. D6-85.000.

Bell & Howell Company: *See*—
Gross, Maynard C.; Porazinski, Robert F.; and Precin, Raymond J., 267,409, Cl. D16-32.000.

Blanchard, Wanda D. Handbag. 267,369, 12-28-82, Cl. D3-44.000.

Boldt, Melvin H.; Morrison, Thurber H.; Becker, Robert W.; and Huff, Robert S., to National Presto Industries, Inc. Portable radiant electric heater. 267,424, 12-28-82, Cl. D23-122.000.

Boling Company, The: *See*—
Lopez-Benitez, Carlos L., 267,371, Cl. D6-31.000.

Brunelle, Rene J.: *See*—
Long, William A.; Fischer, Ward E.; and Brunelle, Rene J., 267,372, Cl. D6-48.000.

Brunson, Welton K.: *See*—
Hubbard, Vance M.; and Brunson, Welton K., 267,434, Cl. D24-64.000.
Hubbard, Vance M.; and Brunson, Welton K., 267,435, Cl. D24-64.000.

Burt, Victor T. Door mat or similar article. 267,385, 12-28-82, Cl. D6-210.000.

C. R. Bard, Inc.: *See*—
Pageau, Gary M., 267,433, Cl. D24-59.000.

Canon Kabushiki Kaisha: *See*—
Hirata, Takashi; and Hirase, Kunio, 267,411, Cl. D18-7.000.

Christensen, Harvey E.; Moretz, Charles H.; and Moretz, John M. Body thermal bandage. 267,427, 12-28-82, Cl. D24-34.000.

Christensen, Harvey E.; Moretz, Charles H.; and Moretz, John M. Thermal bandage. 267,428, 12-28-82, Cl. D24-34.000.

Christian, Hubert E.: *See*—
Groenewold, Van D.; Christian, Hubert E.; and Schwartz, James P., 267,395, Cl. D9-425.000.

Cline, Merlin, to Madison Marketing Limited. Container for filing cards and the like. 267,370, 12-28-82, Cl. D3-73.000.

Compagnie Generale des Etablissements Michelin: *See*—
Amarger, Guy, 267,400, Cl. D12-147.000.

Continental Group, Inc., The: *See*—
Gruodis, Robert J.; Franz, William T.; and Hayes, Edward J., 267,393, Cl. D9-370.000.

Cook, Gregory D., to Cook Machine Company. Beam counterweight for jack pumps. 267,404, 12-28-82, Cl. D15-7.000.

Cook Machine Company: *See*—
Cook, Gregory D., 267,404, Cl. D15-7.000.

Dart Industries Inc.: *See*—
Spoeth, Carl R., Jr.; and Hiatt, Russell D., 267,388, Cl. D7-360.000.

Davis, Edward P.: *See*—
Hart, Claude A.; and Davis, Edward P., 267,401, Cl. D12-151.000.

Davis, Howard. Shoe sole. 267,366, 12-28-82, Cl. D2-320.000.

De Lozada, Rudy. Visored hat. 267,364, 12-28-82, Cl. D2-247.000.

Display Corporation International: *See*—
Hornblad, Richard P., 267,415, Cl. D20-10.000.

Dunlop Limited: *See*—
Hart, Claude A.; and Davis, Edward P., 267,401, Cl. D12-151.000.

Dupas, Jean-Jacques P. R.; and Dupas, Philippe D. R. Pastry shell. 267,362, 12-28-82, Cl. D1-2.000.

Dupas, Philippe D. R.: *See*—
Dupas, Jean-Jacques P. R.; and Dupas, Philippe D. R., 267,362, Cl. D1-2.000.

Ewoldt, Leone C.: *See*—
Wilson, Karen A.; Huber, Paul D.; and Ewoldt, Leone C., 267,363, Cl. D2-244.000.

Faull, James K. Chair base. 267,384, 12-28-82, Cl. D6-196.000.
Fischer, Ward E.: *See—*
Long, William A.; Fischer, Ward E.; and Brunelle, Rene J., 267,372, Cl. D6-48.000.
Franks, Larrabee: *See—*
Harvey, Francis K.; Franks, Larrabee; and Ingraham, David L., 267,437, Cl. D27-08.000.
Franz, William T.: *See—*
Gruodis, Robert J.; Franz, William T.; and Hayes, Edward J., 267,393, Cl. D9-370.000.
Gage, Ripley W. Speaker support. 267,403, 12-28-82, Cl. D14-38.000.
General Motors Corporation: *See—*
Schinella, John R., 267,402, Cl. D12-211.000.
Gibson, Thomas E. Ceramic greenware cleaner. 267,439, 12-28-82, Cl. D32-52.000.
Gillette Company, The: *See—*
Jacobson, Chester F., 267,438, Cl. D28-46.000.
Glore, Thomas G., to Singer Company, The. Combined jointer and planer. 267,406, 12-28-82, Cl. D15-127.000.
Groenewold, Van D.; Christian, Hubert E.; and Schwartz, James P. Packaging container. 267,395, 12-28-82, Cl. D9-425.000.
Gross, Maynard C.; Porazinski, Robert F.; and Precin, Raymond J., to Bell & Howell Company. Resealable toner container. 267,409, 12-28-82, Cl. D16-32.000.
Gruodis, Robert J.; Franz, William T.; and Hayes, Edward J., to Continental Group, Inc., The. Can. 267,393, 12-28-82, Cl. D9-370.000.
Hansen, Nancy J. Galosh. 267,365, 12-28-82, Cl. D2-275.000.
Harada, Mas, to Qualitone Hearing Aids, Inc. Vented ear tip for hearing aid. 267,429, 12-28-82, Cl. D24-35.000.
Hart, Claude A.; and Davis, Edward P., to Dunlop Limited. Tire. 267,401, 12-28-82, Cl. D12-151.000.
Harvey, Francis K.; Franks, Larrabee; and Ingraham, David L. Disposable ashtray. 267,437, 12-28-82, Cl. D27-08.000.
Hayes, Edward J.: *See—*
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Heinrichsdorff, Wolff, to Nabisco Brands, Inc. Combined package display and dispensing rack. 267,382, 12-28-82, Cl. D6-181.000.
Hiatt, Russell D.: *See—*
Spoeth, Carl R., Jr.; and Hiatt, Russell D., 267,388, Cl. D7-360.000.
Hildebrandt, Vernon M. Gas valve shutoff wrench. 267,392, 12-28-82, Cl. D8-28.000.
Hirase, Kunio: *See—*
Hirata, Takashi; and Hirase, Kunio, 267,411, Cl. D18-7.000.
Hirata, Takashi; and Hirase, Kunio, to Canon Kabushiki Kaisha. Electronic calculator. 267,411, 12-28-82, Cl. D18-7.000.
Hori, Kiyoshi, to Nippon Paint Co., Ltd. Paint roller. 267,367, 12-28-82, Cl. D4-38.100.
Hori, Kiyoshi, to Nippon Paint Co., Ltd. Paint roller. 267,368, 12-28-82, Cl. D4-38.100.
Hornblad, Richard P., to Display Corporation International. Point of purchase sign. 267,415, 12-28-82, Cl. D20-10.000.
Hubbard, Vance M.; and Brunson, Welton K., to Tecnol, Inc. Limb holder. 267,434, 12-28-82, Cl. D24-64.000.
Hubbard, Vance M.; and Brunson, Welton K., to Tecnol, Inc. Stirrup strap. 267,435, 12-28-82, Cl. D24-64.000.
Huber, Paul D.: *See—*
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Huff, Robert S.: *See—*
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Ingraham, David L.: *See—*
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Liptak, Richard M.; and Liptak, Thomas P., 267,394, Cl. D9-415.000.
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Karson, Theodore R. Speaker stand or similar article. 267,374, 12-28-82, Cl. D6-85.000.
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Kneale, Edward H., III, to Kneale, Edward H., III. Trivet. 267,386, 12-28-82, Cl. D7-45.000.
Koch, Mark, to Sweet 'N Natural Corp. Package condiment holder. 267,387, 12-28-82, Cl. D7-52.000.
Komarnicki, Gene. Exercise stand. 267,419, 12-28-82, Cl. D21-191.000.
Koziatek, Jerome P.: *See—*
Mower, Henry W.; Seymour, Allen; Koziatek, Jerome P.; and Lendvay, Joseph G., 267,377, Cl. D6-154.000.
Mower, Henry W.; Seymour, Allen; Koziatek, Jerome P.; and Lendvay, Joseph G., 267,378, Cl. D6-154.000.
Kroeger, Daniel E.; and Anderson, Robert C. Pull tab opener. 267,391, 12-28-82, Cl. D8-18.000.
Kuhns, Anthony W.: *See—*
Kuhns, Christopher R.; and Kuhns, Anthony W., 267,399, Cl. D12-92.000.
Kuhns, Christopher R.; and Kuhns, Anthony W. Urban vehicle. 267,399, 12-28-82, Cl. D12-92.000.
Lee, Anne W. Tanning tub. 267,430, 12-28-82, Cl. D24-38.000.
Lendvay, Joseph G.: *See—*
Mower, Henry W.; Seymour, Allen; Koziatek, Jerome P.; and Lendvay, Joseph G., 267,377, Cl. D6-154.000.
Mower, Henry W.; Seymour, Allen; Koziatek, Jerome P.; and Lendvay, Joseph G., 267,378, Cl. D6-154.000.
Lenger, Sidney A., Jr., to Singer Company, The. Dresser or similar article. 267,376, 12-28-82, Cl. D6-154.000.
Lenhart, Richard D.; and Lenhart, Ronald A., to Precision Metal Fabricators, Inc. Side panel unit for a pneumatic article feeder adaptor. 267,408, 12-28-82, Cl. D15-199.000.
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Liptak, Richard M.; and Liptak, Robert S., to Integral Design, Inc. Display holder for brochures and the like. 267,383, 12-28-82, Cl. D6-184.000.
Liptak, Richard M.; and Liptak, Thomas P., to Integral Design, Inc. Display container. 267,394, 12-28-82, Cl. D9-415.000.
Liptak, Richard M.; and Liptak, Robert S., to Integral Design, Inc. Display sign holder. 267,416, 12-28-82, Cl. D20-43.000.
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Long, William A.; Fischer, Ward E.; and Brunelle, Rene J., to UOP Inc. Multi-passenger aircraft seat. 267,372, 12-28-82, Cl. D6-48.000.
Lopez-Benitez, Carlos L., to Boling Company, The. Swivel chair. 267,371, 12-28-82, Cl. D6-31.000.
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Miller, Charles P. Industrial work table. 267,381, 12-28-82, Cl. D6-179.000.
Mitchell, Donald B. Sanitary shield for a bottle or the like. 267,397, 12-28-82, Cl. D9-444.000.
Mitchko, Walter. Mold for building block units. 267,407, 12-28-82, Cl. D15-136.000.
Miyake, Takao; Kawaishi, Masayoshi; and Numano, Masafumi, to Sharp Corporation. Microwave oven. 267,390, 12-28-82, Cl. D7-351.000.
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Mower, Henry W.; Seymour, Allen; Koziatek, Jerome P.; and Lendvay, Joseph G., to Questor Corporation. Chest or similar article. 267,378, 12-28-82, Cl. D6-154.000.
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Porazinski, Robert F.: *See*—
Gross, Maynard C.; Porazinski, Robert F.; and Precin, Raymond J., 267,409, Cl. D16-32.000.
Porter, Terence F., to Mason & Porter Limited. Stove. 267,423, 12-28-82, Cl. D23-105.000.
Precin, Raymond J.: *See*—
Gross, Maynard C.; Porazinski, Robert F.; and Precin, Raymond J., 267,409, Cl. D16-32.000.
Precision Metal Fabricators, Inc.: *See*—
Lenhart, Richard D.; and Lenhart, Ronald A., 267,408, Cl. D15-199.000.
Qualitone Hearing Aids, Inc.: *See*—
Harada, Mas, 267,429, Cl. D24-35.000.
Questor Corporation: *See*—
Mower, Henry W.; Seymour, Allen; Koziatek, Jerome P.; and Lendvay, Joseph G., 267,377, Cl. D6-154.000.
Mower, Henry W.; Seymour, Allen; Koziatek, Jerome P.; and Lendvay, Joseph G., 267,378, Cl. D6-154.000.
Rozsnyai, John W. Table. 267,380, 12-28-82, Cl. D6-179.000.
Russell William, Ltd.: *See*—
Winter, Russell K., 267,379, Cl. D6-175.000.
Santarelli, Francis L. Decorated adhesive bandage. 267,431, 12-28-82, Cl. D24-49.000.
Santarelli, Francis L. Decorated adhesive bandage. 267,432, 12-28-82, Cl. D24-49.000.
Schinella, John R., to General Motors Corporation. Vehicle wheel. 267,402, 12-28-82, Cl. D12-211.000.
Schwartz, James P.: *See*—
Groenewold, Van D.; Christian, Hubert E.; and Schwartz, James P., 267,395, Cl. D9-425.000.
Seymour, Allen: *See*—
Mower, Henry W.; Seymour, Allen; Koziatek, Jerome P.; and Lendvay, Joseph G., 267,377, Cl. D6-154.000.
Mower, Henry W.; Seymour, Allen; Koziatek, Jerome P.; and Lendvay, Joseph G., 267,378, Cl. D6-154.000.
Sharp Corporation: *See*—
Miyake, Takao; Kawaishi, Masayoshi; and Numano, Masafumi, 267,390, Cl. D7-351.000.
Sharp Kabushiki Kaisha (Sharp Corporation): *See*—
Suganoya, Yoshio; and Miyake, Takao, 267,389, Cl. D7-351.000.
Shinshu Seiki Kabushiki Kaisha: *See*—
Mori, Masahiko, 267,413, Cl. D18-13.000.
Singer Company, The: *See*—
Glore, Thomas G., 267,406, Cl. D15-127.000.
Lenger, Sidney A., Jr., 267,376, Cl. D6-154.000.
Spercel, Robert J. Guitar string tuning device housing. 267,410, 12-28-82, Cl. D17-20.000.
Spoeth, Carl R., Jr.; and Hiatt, Russell D., to Dart Industries Inc. Multi-cooker. 267,388, 12-28-82, Cl. D7-360.000.
Suganoya, Yoshio; and Miyake, Takao, to Sharp Kabushiki Kaisha (Sharp Corporation). Microwave oven. 267,389, 12-28-82, Cl. D7-351.000.
Sweet 'N Natural Corp.: *See*—
Koch, Mark, 267,387, Cl. D7-52.000.
Tecnol, Inc.: *See*—
Hubbard, Vance M.; and Brunson, Welton K., 267,434, Cl. D24-64.000.
Hubbard, Vance M.; and Brunson, Welton K., 267,435, Cl. D24-64.000.
Teledyne Industries, Inc.: *See*—
Mackay, Spencer L.; Mackay, Frederick G.; and Johnson, Allan B., 267,422, Cl. D23-34.000.
Therrien, Donald R., to Masel Orthodontics, Inc. Orthodontic harness. 267,425, 12-28-82, Cl. D24-16.000.
Therrien, Donald R., to Masel Orthodontics, Inc. Orthodontic harness. 267,426, 12-28-82, Cl. D24-16.000.
Thorne, David. Pet access door. 267,436, 12-28-82, Cl. D25-48.000.
Toybox Corporation: *See*—
Abe, Yoichi; and Matsumoto, Hajime, 267,418, Cl. D21-62.000.
Tweedie, Richard T. Ammunition clip. 267,421, 12-28-82, Cl. D22-7.000.
Tyke, Charles R., to Westinghouse Electric Corp. Horizontal paper organizer. 267,414, 12-28-82, Cl. D19-92.000.
UOP Inc.: *See*—
Long, William A.; Fischer, Ward E.; and Brunelle, Rene J., 267,372, Cl. D6-48.000.
Van Exel, Gerrit A. Calculating device for conversions or the like. 267,412, 12-28-82, Cl. D18-10.000.
Westinghouse Electric Corp.: *See*—
Tyke, Charles R., 267,414, Cl. D19-92.000.
Wilson, Alvin K. Vegetation scalping and earth boring tool. 267,405, 12-28-82, Cl. D15-21.000.
Wilson, Karen A.; Huber, Paul D.; and Ewoldt, Leone C. Wearing apparel cap. 267,363, 12-28-82, Cl. D2-244.000.
Winter, Russell K., to Russell William, Ltd. Cosmetic display unit. 267,379, 12-28-82, Cl. D6-175.000.
Wortock, Robert J. Wreath. 267,398, 12-28-82, Cl. D11-120.000.

LIST OF PLANT PATENTEES

Beineke, Walter F., to Purdue Research Foundation. Black walnut tree. 4,968, 12-28-82, Cl. 32.000.
McRae, Edward A., to Melridge, Inc. Lily plant: Lilium Golddigger. 4,969, 12-28-82, Cl. 68.000.
Melridge, Inc.: *See*—
McRae, Edward A., 4,969, Cl. 68.000
Purdue Research Foundation: *See*—
Beineke, Walter F., 4,968, Cl. 32.000.

CLASSIFICATION OF PATENTS

ISSUED DECEMBER 28, 1982

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

2.1 R 4,365,351
19 4,365,352
115 4,365,353
247 4,365,354
4,365,355

CLASS 3

1.9 4,365,356
1.91 4,365,357
1.912 4,365,358
4,365,359
13 4,365,360

CLASS 4

213 4,365,361
228 4,365,362
301 4,365,363
378 4,365,364
393 4,365,365
493 4,365,366
555 4,365,367
596 4,365,368

CLASS 5

38 4,365,369
451 4,365,370
462 4,365,371

CLASS 6

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CLASS 8

150 4,365,373
471 4,365,966
477 4,365,967
4,365,968

CLASS 14

71.7 4,365,374

CLASS 15

1.7 4,365,375
22 R 4,365,376
98 4,365,377
4,365,378
104.06 R 4,365,379
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302 4,365,383

CLASS 16

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333 4,365,384
382 4,365,385
4,365,386

CLASS 17

52 4,365,387

CLASS 19

159 A 4,365,388
200 4,365,389

CLASS 24

11 R 4,365,390
197 4,365,391
256 4,365,392
279 4,365,393

CLASS 28

258 4,365,394
281 4,365,395

CLASS 29

25.13 4,365,396
76 R 4,365,397
156.5 R 4,365,399
235 4,365,400
243.53 4,365,401
407 4,365,402
408 4,365,403
455 R 4,365,404
571 4,365,405
593 4,365,406
598 4,365,407
622 4,365,408
623.2 4,365,409
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4,365,411
863 4,365,412

CLASS 30

272 R 4,365,413
310 4,365,414
314 4,365,415
382 4,365,416
422 4,365,417

CLASS 33

185 R 4,365,418
4,365,419
202 4,365,420
366 4,365,421

CLASS 34

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23 4,365,423
4,365,424
54 4,365,425
101 4,365,426

CLASS 37

57 4,365,427
103 4,365,428
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244 4,365,430

CLASS 40

352 4,365,431
365 4,365,432
391 4,365,433
530 4,365,434
608 4,365,435
615 4,365,436

CLASS 44

7 C 4,365,971
53 4,365,972
56 4,365,973

CLASS 46

150 4,365,437
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227 4,365,439

CLASS 47

57.5 4,365,440

CLASS 48

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197 R 4,365,975

CLASS 49

63 4,365,441
346 4,365,442
502 4,365,443

CLASS 51

94 R 4,365,444
103 WH 4,365,445
268 4,365,446
277 4,365,447
334 4,365,448

CLASS 52

28 4,365,449
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169.9 4,365,451
173 DS 4,365,452
478 4,365,453
586 4,365,454
741 4,365,455

CLASS 53

69 4,365,456
412 4,365,457
449 4,365,458
552 4,365,459
563 4,365,460

CLASS 55

4 4,365,976
41 4,365,977
47 4,365,978
181 4,365,979
315 4,365,980
497 4,365,981

CLASS 56

14.3 4,365,461
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327 R 4,365,463

CLASS 57

12 4,365,464
84 4,365,465
205 4,365,466
214 4,365,467
291 4,365,468
293 4,365,469

CLASS 60

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447 4,365,473
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525 4,365,474
673 4,365,475
686 4,365,476
737 4,365,477

CLASS 62

6 4,365,982
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55 4,365,479
81 4,365,983
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149 4,365,482
183 4,365,483
239 4,365,484
320 4,365,485
392 4,365,486
498 4,365,487

CLASS 65

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106 4,365,985
136 4,365,986
137 4,365,987

CLASS 68

212 4,365,489

CLASS 70

70 4,365,490
425 4,365,491

CLASS 71

34 4,365,988
67 4,365,989
100 4,365,990
121 4,365,991

CLASS 72

10 4,365,492
53 4,365,493
63 4,365,494
88 4,365,495
249 4,365,496
255 4,365,497
351 4,365,498
4,365,499
387 4,365,500
416 4,365,501
467 4,365,502

CLASS 73

3 4,365,503
4,365,504
19 4,365,505
151 4,365,506
153 4,365,507
159 4,365,508
290 V 4,365,509
313 4,365,510
384 4,365,511
503 4,365,512
517 R 4,365,513
592 4,365,514
632 4,365,515
644 4,365,516
722 4,365,517
861.31 4,365,518
862.52 4,365,519
862.63 4,365,520

CLASS 74

471 XY 4,365,521
475 4,365,522
606 R 4,365,523
715 4,365,524
768 4,365,525
866 4,365,526

CLASS 75

60 4,365,992
68 R 4,365,993
123 B 4,365,994

CLASS 81

431 4,365,527

CLASS 82

4 C 4,365,528
38 A 4,365,529

CLASS 83

490 4,365,530
767 4,365,531

CLASS 84

1.19 4,365,532
1.24 4,365,533
297 S 4,365,534
421 4,365,535
433 4,365,536
454 4,365,537

CLASS 91

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CLASS 92

17 4,365,539

CLASS 98

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40 V 4,365,542
58 4,365,543

CLASS 99

297 4,365,544
459 4,365,545
567 4,365,546

CLASS 100

38 4,365,547
154 4,365,548

CLASS 101

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124 4,365,551
218 4,365,552
232 4,365,553
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CLASS 102

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307 4,365,556
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431 4,365,558
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477 4,365,560

CLASS 106

22 4,365,998
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287.11 4,366,001

CLASS 108

7 4,365,561
108 4,365,562

CLASS 110

186 4,365,563

CLASS 112

103 4,365,565
121.12 4,365,564
158 F 4,365,566
184 4,365,567
291 4,365,568
315 4,365,569

CLASS 114

39 4,365,570
42 4,365,571
104 4,365,572
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356 4,365,580

CLASS 116

52 4,365,581
70 4,365,582

CLASS 118

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CLASS 119

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CLASS 123

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179 SE 4,365,596
198 F 4,365,597
339 4,365,598
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568 4,365,608
635 4,365,609

CLASS 124

5 4,365,610
24 R 4,365,611
54 4,365,612

CLASS 126

25 A 4,365,613
247 4,365,614
419 4,365,615
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425 4,365,617
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428 4,365,619
429 4,365,620

CLASS 128

1 R 4,365,621
1.3 4,365,622
75 4,365,623
92 A 4,365,624
202.22 4,365,627
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214.4 4,365,630
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303 R 4,365,632
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CLASS 131

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CLASS 132

88.5 4,365,642

CLASS 134

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25.2 4,366,005
38 4,366,006

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426 R 4,365,655

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CLASS 148

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CLASS 152

354 R 4,365,659

CLASS 156

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157 4,366,014
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273.9 4,366,018
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CLASS 162

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104.29 4,365,666
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CLASS 166

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231 4,365,669
295 4,365,670
318 4,365,671

CLASS 172

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126 4,365,674

CLASS 173

105 4,365,675

CLASS 174

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48 4,366,341
52 FP 4,366,342
52 S 4,366,345
65 R 4,366,343
4,366,344

CLASS 175

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173 4,365,677
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371 4,365,679

CLASS 177

212 4,365,680

CLASS 179

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2 DP 4,366,347
84 VF 4,366,348
107 FD 4,366,349
175.2 C 4,366,350

CLASS 180

68.5 4,365,681
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132 4,365,683
133 4,365,684
135 4,365,685
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315 4,365,687

CLASS 181

145 4,365,688

CLASS 182

97 4,365,689

CLASS 185

45 4,365,690

CLASS 187

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9 E 4,365,693
29 R 4,365,694

CLASS 188

73.39 4,365,695

CLASS 192

67 R 4,365,696
89 B 4,365,697

CLASS 193

2 B 4,365,698
35 SS 4,365,699

CLASS 194

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22 4,365,701

CLASS 198

347 4,365,702
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395 4,365,704
424 4,365,705
499 4,365,706
672 4,365,707

CLASS 200

16 R 4,366,351
35 R 4,366,352
48 R 4,366,353
154 4,366,354
159 B 4,366,355

CLASS 201

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CLASS 202

174 4,366,027
248 4,366,028
262 4,366,029

CLASS 203

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18 4,366,031
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CLASS 204

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55 R 4,366,036
98 4,366,037
195 M 4,366,038
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195 S 4,366,039
252 4,366,041
290 F 4,366,042

CLASS 206

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387 4,365,711
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461 4,365,714
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632 4,365,716

CLASS 208

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8 R 4,366,043
10 4,366,044
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11 R 4,366,046
89 4,366,047
127 4,366,048
179 4,366,049

CLASS 209

167 4,366,050
539 4,365,717
586 4,365,718
589 4,365,719

CLASS 210

96.2 4,366,051
199 4,366,052
222 4,366,053
266 4,366,054
350 4,366,055
435 4,366,056
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635 4,366,060
647 4,366,061
651 4,366,062
652 4,366,063
668 4,366,064
671 4,366,067
695 4,366,065
696 4,366,066
767 4,366,068
788 4,366,069

CLASS 211

60 T 4,365,720

CLASS 215

217 4,365,721
220 4,365,722

CLASS 219

10.51 4,366,356
10.55 B 4,366,357
69 M 4,366,358
4,366,359
4,366,360
78.01 4,366,361
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125.11 4,366,363
146.24 4,366,364
225 4,366,365
247 4,366,366
272 4,366,367
367 4,366,368
388 4,366,369
535 4,366,370

CLASS 220

3.8 4,365,723
67 4,365,724
96 4,365,725
211 4,365,726

CLASS 222

97 4,365,727
209 4,365,728
321 4,365,729
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CLASS 223

57 4,365,732

CLASS 226

109 4,365,733

CLASS 227

152 4,365,734

CLASS 228

38 4,365,735
121 4,365,736

CLASS 229

17 R 4,365,737
23 R 4,365,738
32 4,365,739

CLASS 232

35 4,365,740

CLASS 235

92 DM 4,366,373
92 MP 4,366,371
92 PL 4,366,372
93 4,366,374
100 4,366,375
101 4,366,376

CLASS 236

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CLASS 237

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CLASS 238

8 4,365,743
323 4,365,744

CLASS 239

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590 4,365,758
703 4,365,759
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CLASS 241

21 4,365,761
60 4,365,762
70 4,365,763
101 A 4,365,764

CLASS 242

43 R 4,365,765
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67.1 R 4,365,767
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CLASS 244

17.11 4,365,770
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45 R 4,365,773
46 4,365,774
53 R 4,365,775
151 A 4,365,776

CLASS 246

130 4,365,777

CLASS 248

229 4,365,778
371 4,365,779

CLASS 249

11 4,365,780
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91 4,365,782
124 4,365,783
139 4,365,784

CLASS 250

211 J 4,366,377
214 AG 4,366,378
251 4,366,379
306 4,366,380
316.1 4,366,381
492.3 4,366,383
575 4,366,384

CLASS 251

231 4,365,785

CLASS 252

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8.55 R 4,366,071
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174.11 4,366,078
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416 4,366,083
426 4,366,084
431 C 4,366,085
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431 R 4,366,086
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437 4,366,089
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466 PT 4,366,091
476 4,366,092
477 R 4,366,093
512 4,366,094
633 4,366,095

CLASS 254

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106 4,365,787

CLASS 260

123.5 4,366,097
239.1 4,366,098
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410.7 4,366,100
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463 4,366,102
967 4,366,103

CLASS 261

18 A 4,366,104
35 4,366,105
156 4,366,106

CLASS 264

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137 4,366,108
255 4,366,109
328.13 4,366,110
518 4,366,111

CLASS 266

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87 4,365,789
103 4,365,790

CLASS 267

166 4,365,791

CLASS 269

24 4,365,792

CLASS 271

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236 4,365,795
274 4,365,796
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CLASS 272

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56.5 R 4,365,799
76 4,365,800
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118 Re.31,113

CLASS 273

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5 R 4,365,803
25 4,365,804
31 4,365,805
73 C 4,365,806
81 C 4,365,807
84 R 4,365,808
157 R 4,365,809
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238 4,365,811
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317 4,365,814

CLASS 277

22 4,365,815
88 4,365,816
188 R 4,365,817
237 R 4,365,818

CLASS 280

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411 C 4,365,820
615 4,365,821
625 4,365,822
637 4,365,823
689 4,365,824
777 4,365,825
779 4,365,826
804 4,365,827
825 4,365,828

CLASS 285

162 4,365,829

CLASS 290

38 R 4,366,385
44 4,366,386
55 4,366,387

CLASS 292

89 4,365,830
229 4,365,831
256.5 4,365,832
318 4,365,833

CLASS 294

85 4,365,834
87.2 4,365,835

CLASS 297

85 4,365,836
216 4,365,837
379 4,365,838
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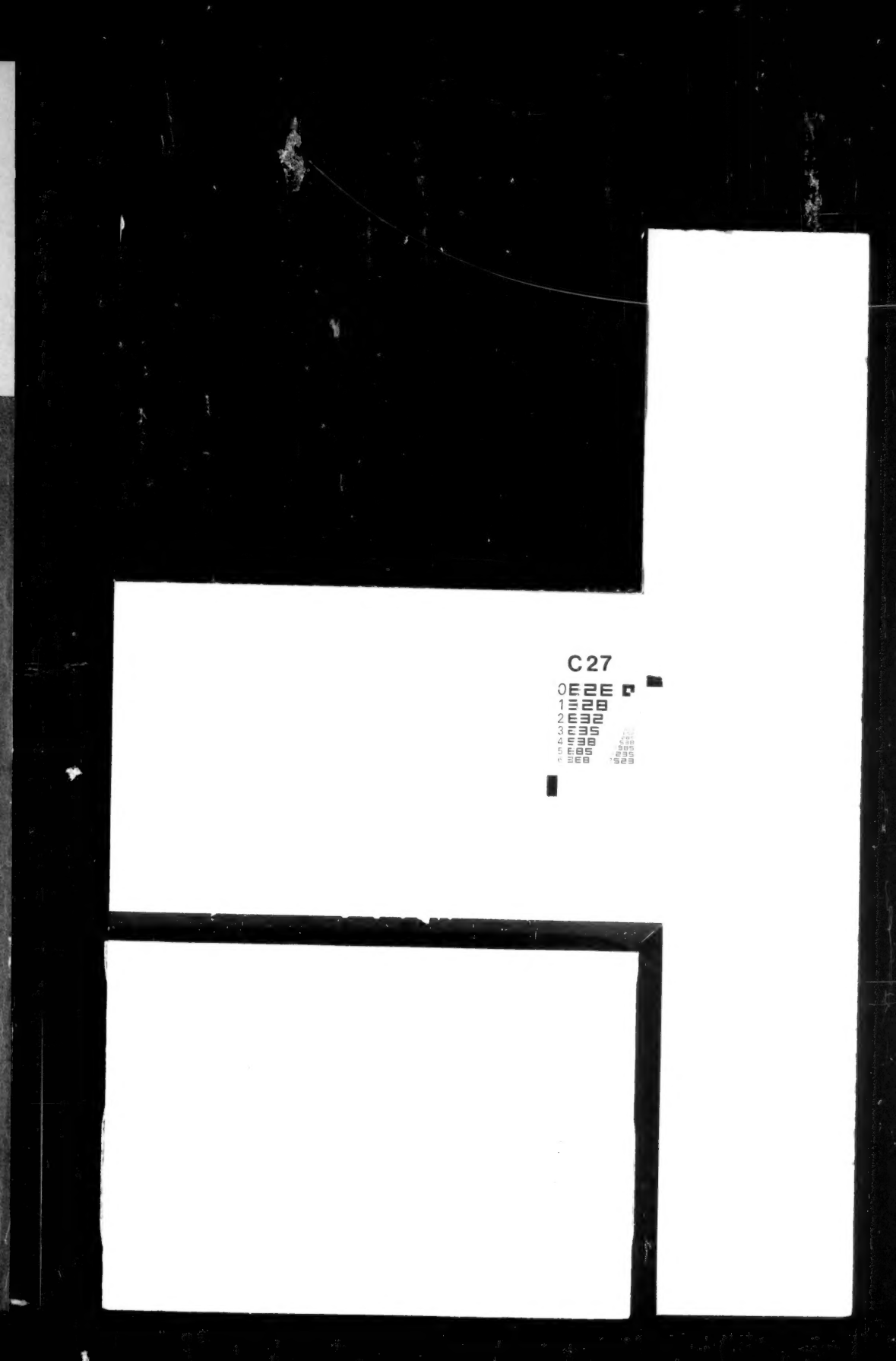
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